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ABSTRACT

Written by a methodological behaviorist, this treatise critiques neo-Hullian, Freudian, Eriksonian, and Piagetian theories and presents an ethological perspective on behavior and personality development. The critique is extended to cover social learning, cognitive-developmental, neo-Freudian, and Skinnerian theories, as well as the ideas of Bandura. Assumptions for conducting research and allowing for interpretation and integration of findings are specified and discussed. These assumptions include the following ideas: (1) that fundamentally important behaviors can be seen in conflict situations; (2) that all behavior must be viewed with the past history of the subject in mind; (3) that important manipulative skills can be noted directly and that covert behavior can be inferred by an observer who has been engaged in an extensive longitudinal study; (4) that only unobtrusive observations used to interpret the behavior of single subjects will be unbiased; (5) that all behavior is directly or indirectly interactive with the environment, is homeostatic, or works toward homeostasis and that all species-typical behavioral developments are adaptive; (6) that all behaviors must be construed "within the subject's perceptual-thought system"; and (7) that interpretation involves comparing present behaviors with similar past behaviors and interpreting them in terms of various possible types of behaviors and in terms of specified mechanisms of change. Any theory that fulfills these assumptions is considered to be an ethological theory of personality development. A bibliography of suggested readings is appended. (RH)

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Key Chapters and Sections of

"A HUMAN ETHOGRAM: ITS SCIENTIFIC ACCEPTABILITY AND IMPORTANCE"

by

Bradley Jesness

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A TREATISE

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FOREWARD AND ACKNOWLEDGEMENTS

I believe the new perspective embodied in this treatise offers something for psychologists of all theoretical persuasions. Yet it is in no way a hodgepodge of the various views; it is new. It is complementary to the short term studies and observations of behaviorists, psychoanalysts, and ethologists. The editor of my work, Richard Combes of the University of Iowa, was quick to point out that I am a "methodological behaviorist". By that he meant that overt behavior is used to explain the development of all species-typical behavior I write about. Indeed, this is so and, this being the case, my perspective is hopefully very respectable and welcome to both psychologists and other scientists. But it is a new behaviorism, a new type of radical behaviorism. While other behaviorists claim to hold an empirically based view of the development of behavior, my view is unique in explicitly extending this orientation on behavior to explain the development of covert behaviors, that is, thoughts, concepts, and thinking. Such ideas have a very poor theoretical basis in modern behaviorism. The new perspective more fully and truly embodies the "null hypothesis" that all significant behaviors (in the broadest possible sense of the term) develop to a great extent through overt interaction with the environment. The key to seeing this, I believe, is long term developmental studies. The bases of covert behavior simply must once have been manifest and overt and thereafter further changes may indeed make behaviors absolutely or for all practical purposes covert. Yet they may be very important for future behaviors and for further development.

Another point of difference between modern behaviorism and my

view has to do with the competency of the observer -- the amount of inter-observer reliability one might expect when studying the types of general species-typical developmental phenomena I consider. Given not only the type of phenomena I propose to study, but also the basis of assumptions and principles with which I say one must work and the developmental approach I propose, there is no need for further controls for one to make significant and replicable observations. I best reemphasize that this is indeed only true for the types of species-typical phenomena I wish to study and is not true for phenomena which have little to do with general questions concerning the nature of the species. It is a basic fallacy of thought in modern psychology when one supposes that because there is little agreement between experimenters and observers in some specific areas of study without strict "experimental design" and strict controls that this problem would indeed extend to all questions and all types of study. The general questions I deal with can be justifiably assumed (almost by definition) to be immune from being misconstrued if a holistic developmental approach is taken and the guiding principles and assumptions applied. Following my course what one will end up with is a true outline of the general species-typical apsects of behavior and its development. Using my perspective by itself will not give a complete picture of the organism at any particular stage and will even come further from giving a complete explanation of the behavior of individuals with regard to more specific questions. To clarify the place of my ethological perspective in the realm of psychological thought as a whole I have written Appendix II, which the reader may consult for a further elaboration. Reading the treatise and this, one should understand that although

my perspective does not offer a total explanation for all aspects of behavior (a full cause and effect explanation for any actual, particular behavior), my ethological perspective is a necessary complement to researching and coming to an understanding of these more particular questions. In concrete terms this is so because my approach tracks the development of portions of behavior -- the most general aspects of behavior -- and understanding these is necessary to the understanding of more particular aspects of behavior and to understanding them in context.

In ways my thought is more similar to that of the neo-Freudians who attempt to arrive at an understanding of species-typical, stage-typical behavior. But in fact my approach is so radically different in its understanding of the issues of consciousness and what is "unconscious" that our similar goals may not be recognized and my method may be rejected. In order to recognize and affirm that some of the neo-Freudian descriptions and attitudes are qualitatively quite correct, I have written Appendix I. Appendix I notes my view of what is conscious. Psychoanalytically oriented theorists, observers, and researchers should find this outlook new but yet clearly related to their ways of thinking. They should find my conclusions regarding the place of conscious thought and thinking in the total realm of covert behaviors fairly conducive to their way of thinking.

Finally, let me note the place of my perspective and approach in the realm of ethological studies. First let me say that the assumptions and guiding principles used by many modern ethologists and those I use are very, very similar. We differ more in the scope of our studies and of our goals than anything else. Modern ethol-

ogists use a holistic naturalistic and principled approach very similar to my own. In their particular studies of humans (see Ethological Studies of Child Behavior, edited by N. Blurton Jones), they study children extensively enough that they often seem close to identifying species-typical behaviors. Indeed, in time we may find that many times they have. These species-typical behaviors are often more particular or stage typical than those I propose to investigate, yet important and very real. My view is entirely congruent with many of these studies. I would neither deny nor exclude any of the patterns of behavior these ethologists have so respectably discovered. My perspective in fact complements their studies. What this means in effect is that studies using my perspective would allow for the systematic (and true) integration of their particular findings -- allowing the total context of those findings to be understood and their further development to be understood. The importance of being able to integrate reliable observations as well as the experimental results of those of all persuasions is the major contribution those operating with my perspective are apt to provide. It is precisely the lack of the ability to integrate results which motivated my work. It is a constant problem and a disturbing problem in modern psychology which begs for a solution. I ask the reader to consider my assumptions, principles, and approach as a way to get beyond the stage and the point of having simply a morass of seemingly disparate facts.

In closing, I wish to acknowledge the help I received in presenting my view. First, thanks to the curiosity of Richard Combes, a member of the Philosophy Department at the University of Iowa, I was able to obtain his services in editing my work. He examined the

work closely and proposed many elaborations and clarifications. He was as competent an editor as I could have hoped to find.

I am very grateful to my wife Renee for the numerous typings of this work.

B. Jesness

AUTHOR'S PREFACE

The portion of the treatise I have completed represents the scope and the argument of what would be the larger book. But, in fact, it stands very well with many modern theoretical assumptions. The work, as is, also thoroughly outlines a new perspective for understanding human behavior and describes how prevalent modern approaches to the study of behavior and behavior change fall short. The basic assumptions of a new theory of behavior and behavior change are enumerated. All that is lacking is a complete proof that many modern theoretical assumptions are in fact in error (although the nature and the method of this proof are also indicated). Because the method to be used in the task of providing a thorough proof of the validity of my new perspective, while showing many prevalent modern theoretical assumptions in error, is indicated, this task may be undertaken by interested readers as well as by myself. The usefulness of the new approach may also be indicated by applying it and noting its efficacy. Thus, the entire book need not be written to gain the full benefit of the work.

The Chapters and Sections included herein are: the Introduction, Chapter One, Chapter Two, and the "core" of Chapter Five. What is the content of each Chapter and the strategy of the treatise are described in the Introduction. What would be the content of Chapters Three and Four is also described in the Introduction. I have been told that reading of the "Key Chapters and Sections" is very much enhanced if one reads the "core" of Chapter Five first, where the assumptions of the approach to understanding behavior and behavior change are enumerated. I highly recommend this procedure.

B.L.J.

An Introduction to the Thesis and the Strategy of the Treatise

With this treatise it is my intention to show that there are major similarities in the interpretive procedures used by all the major theories of personality development. Many of the conclusions yielded by the type of interpretive procedures I see operating today are distinctly too narrow. The interpretive procedures are biased. All behavior and behavior change is interpreted in terms of relatively short-term mechanisms. The bias persists even though the existence and potential importance of other longer-term mechanisms have already been demonstrated by students of animal behavior called ethologists.

It would be possible to indicate the problem by contrasting the interpretations of behavior given by modern theories of personality development with a more broad-based and broad-minded approach to interpreting supposedly the same phenomenon. But, it would be impossible to prove the modern approaches in error by this method. Fortunately, the problem with modern interpretive assumptions can be proven from another standpoint. It can be shown that errors in theory development result in the strange kind of unwarranted and exclusive support for biased interpretive assumptions. Correcting the errors in theory development and thereby legitimizing alternative (additional) interpretations of behavior is the major goal of this treatise.

The overall problem can be found in past theories and in philosophies of the mind, as well as in present theories. The fact is that errors in theory development have important historical roots. But for the purposes of an introduction, the nature of the problem

can be most easily characterized with regard to modern theories.

Most modern theorists with the exception of some psychoanalytic theorists, are experimenters. They make certain assumptions about the way experiments are to be conducted. I call these assumptions operational assumptions. Initial observations are then made or initial studies are run and interpretive inferences are made. But also, at this point, further assumptions concerning how data are to be interpreted are formulated. These are some of the interpretive assumptions I believe are so problematic. Also at the core of the problem is the fact that only now, after all this has been done, are many of the basic premises of modern theories formalized and the theories composed. Some readers may see an indication of the potential for problems, but doubt that any serious problems actually exist. But, as we shall see, there are consequences of attempting to use this procedure (at least in the way it is done today) in developing the basis for theory, which definitely signal a problem.

Indeed, modern theorists content themselves with a few poorly justified operational assumptions and the corresponding interpretive inferences, plus additional interpretive assumptions as the primary basis for their theories. When one examines modern theories of personality development carefully, it can be seen that they have been drawn up, as much as possible, on this basis. Many basic, general questions about human nature are in fact answered only after the theory has been developed in the way I have outlined. Two examples of such questions are: "Is the human organism active or passive during periods of behavior change?" and "Should the human organism be characterized as possessing or tending toward basically good behaviors or is he best characterized as possessing irrational drives

which must be controlled through socialization?" There are a number of other examples I could give and indeed the questions just cited and other basic questions will be examined thoroughly in the body of the treatise.

An indication of a problem with answering basic, general questions after a theory has been developed soon becomes apparent. Although it is common practice to deduce answers to basic questions as much as possible from theory, many of the answers are nonetheless viewed as theoretical assumptions. Apparently common sense has it that the answers to such questions should be assumptions. In fact, as is, the answers to many basic general questions about human nature are conclusions rather than assumptions.

Any reader familiar with theory development in the classical sciences will realize that all true assumptions are made before a particular theory is developed. Well-founded assumptions are based simply on direct observation and the application of relevant, established scientific principles of a relatively general nature. Because of this, a theory's premises and the theory itself are of a more specific nature than the basis for its assumptions. Although assumptions may be altered on the basis of the results of research, assumptions are formulated for the purpose of an initial theory and are used to develop that theory. I suppose, sometimes they are inadvertently or unavoidably altered in the process of integrating them into theory, but assumptions are never determined by the theory. Again, one should not be confused by the fact that new assumptions leading to theory development or new theories may result from research. Although theory dictates research hypotheses, it should not dictate the results. Only research results are the impetus for reassessing theoretical assumptions.

If what I have contended is true, I have brought to light a problem in understanding modern theory. This problem is what I call pseudo-assumptionism. It is the practice of drawing conclusions largely from theory and viewing these as assumptions of the theory. But we can go a step further and show that pseudo-assumptions are a substantial problem and result from problems with the theories themselves. The proof is that poor quality answers to basic questions follow from problems with the theories, for it can be demonstrated that better (more empirical and scientifically acceptable) answers to the same basic questions can be obtained on the basis of direct observation and the application of necessarily relevant biological principles. In other words, there are basic general questions about human nature that can best be answered before a theory is put together and stated. Because this is so, it stands to reason that these answers to cogent, basic, general questions about human nature should function as assumptions for any theory of personality development to prevent it from going awry.

We shall see that a more comprehensive set of beginning assumptions will result from using direct observations and the application of necessarily relevant scientific principles to answer a number of basic questions. Another result of the adoption of this new set of assumptions will be the legitimization of other possible interpretations of behavior and behavior change.

In this treatise I shall characterize and demonstrate the interpretive bias resulting from modern approaches to studying behavior and from the assumptions underlying interpretive procedures, as embodied in modern personality theories; I shall illustrate a history to the narrow-minded interpretive approaches and shall specu-

late on why the problem existed and why it still remains; and I shall show the effects of strongly embedded interpretive biases on the answers given to questions about human nature. Then I shall demonstrate how the important general questions are better answered and show how these answers can be used as the basis for a new, more comprehensive set of theoretical assumptions.

After integrating the answers to basic questions into a new set of operational and interpretive assumptions, I shall argue that any good theory of personality development should include these among its basic assumptions or, in the interest of practicality, explicitly legitimize why, in some ways,[1] it need not. I shall characterize any theory that fulfills these criteria as an ethological theory of personality development and note some implications for research. The primary implication will be that the first studies of human subjects should be general studies to obtain what ethologists would call a human ethogram. An ethogram is a complete account of all the species-typical behaviors of an organism.

At the risk of being somewhat redundant, let me indicate which topics the reader can expect to find addressed in each chapter. Doing this will help explain my strategy:

Although I noted that contrasting general theories of human behavior and its development (i.e. theories of personality development) with alternative explanations of supposedly the same phenomenon would not prove anything, it will nonetheless provide us with a

[1] Which assumptions may be breached without violating basic biological principles should be clear.

concrete basis from which to argue much. Thus, I shall offer a new perspective on behavior and behavior change in Chapter One. It will hopefully be interesting and promote the understanding and appreciation of all that is to follow. Though the new perspective results from a new set of assumptions, I shall come up with the assumptions and justify them later on. I shall offer the new perspective by re-interpreting each of the prevalent types of personality theory in terms of my assumptions, but what the assumptions are will not be made explicit. I do not explicitly state the assumptions in Chapter One because I feel I must argue for them first in Chapters Three and Four before finally delineating them in Chapter Five. (Anxious readers may read ahead in Chapter Five, where assumptions are enumerated, if they wish.) Chapter One will simply outline a perspective that should be interesting because it takes a broad and open-minded approach to explaining what other theories have attempted to explain.

Chapter Two is intended to strongly suggest that interpretive bias exists in even the newest and most accepted theories of personality development. The nature of what I see as time-biased interpretive procedures will be described and illustrated.

Chapter Three will more clearly define what I see as the cause of interpretive problems and how it results in pseudo-assumptionism. The reader with a knowledge of principles of science will hopefully see that if the proposed observational biases are reflected in one's thinking or in a theory, the other problems will certainly follow. Chapter Three is an historical chapter so the nature and cause of the obsevational biases and the resulting interpretive biases and pseudo-assumptions will be indicated with regard to the thinking

of certain philosophers of mind. Nonetheless, this chapter will be directly pertinent to the examination of modern theories. Not only do observational and interpretive biases continue to be a problem for some of the same historical reasons, but some of the same basic questions which occurred to philosophers of the 18th and 19th centuries are still posed and then answered in an improper way similar to that used by these philosophers of the past.

The impropriety in the method used by important philosophers of mind in answering basic questions will be indicated and then demonstrated by showing that some of the same basic questions about human nature can be answered in an easier and yet more acceptable way. I will more meaningfully answer these questions by the application of relevant scientific principles to direct observations. The answers obtained in this way will be part of the body of justifiably presumed facts upon which the new comprehensive set of assumptions (Chapter Five) will be based. In short, Chapter Three should show that the problems of interpretive bias and pseudo-assumptionism are indeed related problems and will indicate the cause as observational bias.

In Chapter Four, the likely reasons why observational bias and the related problems of interpretive bias and pseudo-assumptionism remain today will be explored. Then, I shall be explicit and describe how particular basic, general questions are still answered in an improper way. And again, as in Chapter Three, I shall answer them by applying established scientific principles to direct observations. Again, this will be seen as the more legitimate method for deriving acceptable and meaningful answers. As in Chapter Three, many of the answers obtained will be justifiably presumed facts

upon which the new set of assumptions will be based. Other very general and basic questions will be asked and answered in the same way to provide the rest of the material for the assumptions.

In Chapter Five all of the justifiably presumed facts will be put together to construct various assumptions. These assumptions will be delineated in such a way that they may be integrated into a meaningful body of assumptions. In other words, all the justifiably presumed facts will be put together into assumptions and these assumptions will be put together so that they do not appear contradictory.

The set of assumptions will be proposed as the basis for a new type of personality development theory -- namely, an ethological theory of personality development. Such a theory would generate testable hypotheses as any good theory should, but will not make the mistake of biasing interpretation from the outset. Any new ethological theory proposed would seem to require as a first study of human development a study of the whole subject. We shall see that this first study must be as much as possible an unobtrusive, longitudinal study of human development from birth to maturity to assess which behaviors are species-typical. This is commonly known in the field of ethology as obtaining an ethogram. The first study of animals involves obtaining an ethogram; the first study of man should involve obtaining the human ethogram.

It should be noted that because this is a treatise, I shall be engaged in describing and evaluating theories past and present and in describing the way things should be. The reader will have to be knowledgeable enough to see that the descriptions and evaluations

are essentially correct. One should not expect a blow by blow expose' of all the ramifications of the general problems I describe. One should be familiar enough with research and the general aspects of its interpretation to understand the more important implications. Moreover, I shall not detail all that one should expect from the approach to the study of behavior following from the new set of assumptions. But once again, the most important implications should be clear. A complete examination of all the consequences of the new assumptions is not required of a treatise.

One should not expect to find much documentation of examples of particular experiments and other studies. My concerns are of the most general nature, and only a general description of common problems found in the very numerous particular instances of applying existing theories should be necessary for my purposes.

I will describe the changes that should be made and the scientific principles upon which they are based, but again, the reader will have to have the background that will allow him to see that indeed this is a scientific method and indeed it is found throughout the classical sciences.

CHAPTER ONE

A Holistic and Integrative Perspective: An Ethological Perspective on Behavior and Personality Development

The following will not be the formal presentation of a theory. In order to develop a new theory, one has to formulate a set of new assumptions and apply these assumptions to new observations of human behavior. This application of assumptions to <u>new</u> observations generates a theory, but this will not be done here or elsewhere for the purposes of this treatise. Rather, I will apply my assumptions to what might have been the observations made by others when they were generating their theories. The ethological perspective will be presented in contrast with important historical representatives of the types of personality theories prevalent today. As such, this chapter may be viewed as one possible ethological critique of these theories.

It is my primary purpose to present my ethological view. For this purpose there is little reason to examine the modern and widely accepted social learning theories here. These more recently developed theories will be among those closely evaluated in Chapter Two. In so doing, I'll show that interpretive bias, similar to that found in the older theories soon to be examined, is readily found in modern theories. Indeed, if not for the fact that Chapter Two has more detailed concerns, I would have to offer few ethological interpretations not found in Chapter One. Most notably, we will find that the differences between the modern social learning theories and the ethological perspective is nearly identical with the differences between the ethological perspective and neo-Hullian theory. Therefore much of what is said here will be relevant when evaluating (in Chap-

ter Two) the more modern theories which are most highly regarded in academic circles today.

I will begin by giving an ethological interpretation and analysis to the observations of the neo-Hullians. We shall then examine the theories of Freud and Erikson and offer alternative ethological interpretations as much as possible. I will then briefly characterize and offer a critique of Piaget's cognitive developmental theory.

I. Critique of Neo-Hullian Theory

Neo-Hullian theorists believe that a human is born with a few basic reflexes, but that all significant aspects of one's personality are "learned". A more general statement, including more possibilities, could have been: All significant behavior change is the product of interaction between the organism and its environment. But neo-Hullians did not believe that this was necessary. They believed that all behaviors and mechanisms of behavior change can be viewed and understood during the span of time of a laboratory experiment. One taking an ethological approach would dare say that the possibility exists that there may be a class of mechanisms that require one observe the subject for a much longer span of time to view them in their context and to realize their essential character. And there is a possibility that basic (primary) cause -- basic (primary) effect sequences could also span a longer time period. I shall delineate such possibilities as we continue, but first let's emphasize the importance of this neo-Hullian assumption.

In essence, neo-Hullians believed that all mechanisms of behavior change occurred in the time-restricted environment of the lab or during hypothetical learning events -- events which could hypo-

thetically take place and be understood in the time frame of the lab experiment. This latter is, in short, what applying "principles of learning" meant and still means. Correspondingly, they believed that all scientifically acceptable mechanisms involved in behavior change would be discovered in the lab. Other organismic states would have to be hypothesized (as hypothetical, or intervening, variables) and evidence for them would also have to be found in the lab setting. Until proven otherwise, the mechanism of the development of these hypothetical variables -- the mechanism of change in these hypothetical variables -- would surely be construed as compounded learning.

As one might expect then, the hypothetical variables were: (1) simple habits -- presumed to have developed largely from basic reflexes and by mechanisms of learning which they observed and controlled in the lab, and, (2) generalized drive states -- where the "objective" stimulus simply energizes the organism and the organism responds with its repertoire of habits and/or innate responses to reduce the drive state. The habits which were most effective in reducing the drive state were strengthened. The subject undergoing this learning process had no "active part" in whatever phenomenon was presently under observation. This is to say that no complex behavioral systems were thought to interact in the process.

On these points the ethologist would again take exception. First, habits need not develop simply by learning or through the influence of learning on innate reflexes. I will soon describe how innate action patterns may emerge at many points during development and influence habit formation. Habits exist only in the sense that the concept is a good description of the characteristics of portions of behavior viewed in the short run and out of a broader context,

which would show their more highly adaptive nature. When a broad-minded view of the organism is taken, more is seen to be involved in the formulation of significant habits than learning alone.

Second, there is no reason to believe that we are driven by generalized (undifferentiated) drive states. Many other animals show distinct, differentiated innate sequences of behavior, in addition to acquired behaviors, in response to stimuli or classes of stimuli in the environment. In fact, many acquired behaviors subserve each of the innate prepatterned sequences of behavior so much so that an organism's responsiveness, in general, is better characterized by these distinct innate action patterns than as generalized drive states. Since these superordinate behavior patterns are innate they, of course, are not habits. An organism's more significant habits may develop as behaviors intercoordinate in response to the salient releasers of the innate action patterns.

There is no reason to assume that these innate behavior patterns, which I call innate action patterns, are not present in humans. Such patterns appear to be involved in human emotional reactions and in the development of cognition and cognitive processes. Moreover, given out knowledge of innate behavior patterns in animals and the general information we have on cognitive development in humans, these innate action patterns certainly need not be limited to innate reflexes, present at birth. Also, as I shall explain later, those innate action patterns which are not present at birth do not simply develop from innate reflexes, modified by learning. Nor do these significant innate elements of behavior need to be simple in any familiar or common sense of the term.

Third, if one accurately describes an organism's behavior, it is likely that one would have to conclude that some complex behav-

ioral patterns are guided innately and do not always act in response to the "stimuli" in the ways which are considered by researchers today. Nor do the stimuli need to be those of which the subject is cognizant. "Searching behaviors" in an awake alert organism are an example. These occur regardless of the familiarity with the environment. The fact that they occur to a greater extent in some unfamiliar environments in no way invalidates this interpretation.

Humans, too, may have some general sorts of behavior which operate to some extent during all waking periods. (Moreover, as we shall see, such behavior patterns or complexes probably differ from stage to stage during human development.) Today, we know that humans and other organisms are not "passive", but are engaged in complex evaluation of the environment. The fact that evaluations are somehow colored by past associations (learning) in no way negates this fact. Social cognitive researchers tell us that much ongoing human activity is best described as an "active" process. Innately guided patterned responses may be at the core of what they are referring to.

Let's again return to the most basic issue: the old-fashioned idea that all our past associations are formed solely by way of mechanisms studied by early learning psychologists. There are three alternative notions we must recognize. First, there is no reason to believe that the human, at a given point in development, may not be especially responsive to certain class aspects of environmental stimuli, rather than always responding to what mature researchers themselves view as the "objective" stimuli. This is especially true and very often true with younger human subjects. As noted before, organisms often show not general responsiveness but innate action patterns; and these are not usually responses to the "objective" stimu-

li but to special groups or subsets of these so-called "objective" stimuli. In this way, children of different ages may be in the process of "discovering" class relationships between objects of one kind or another. For example, a six month old may be concerned with the properties of an object itself and not with how the object relates to similar objects or to its physical context, at least in any easily imagined way (in any way that is easy to hypothesize on the basis of artful intuition). If such behavior involves innate perceptual biases and innate responsiveness, as I believe, then innate behaviors need not be limited to the innate reflexes, present at birth. Also, fewer behaviors can be best viewed as having developed from the innate reflexes modified by learning. It is interesting to note that these facts may be vaguely and implicitly recognized by theorists of some of the other schools we shall examine.

There is a second possibility which must be recognized. This possibility speaks to the issue of long-term behavior changes noted earlier. Specifically: the aspect of stimuli or the classes of stimuli (releasers) to which an organism is especially responsive and the organism's corresponding innate action patterns may change qualitatively over long periods of time. This would not be observed during short periods of study. Moreover, the process of radical change often cannot be modeled on the learning processes presently seen as operating during short-term lab experiments even with the perspective of the last paragraph in mind. Ethologists believe that large changes in complex behavior systems (e.g. cognitive behaviors) are often due to the emergence of new innate action patterns. Examples of such changes will soon be given and the way the process occurs will be described later in the chapter.

Thirdly, the type of radical qualitative changes referred to in the last paragraph may occur a number of times and yet in an orderly fashion. This implies a superordinate mechanism controlling the emergence of a series of new innate action patterns.

Let's take time now to give examples of the behaviors and mechanisms of behavior just described. We will deal with them from the simplest to the most complex as follows: (I) innate action patterns; (II) changes due to the emergence of a new innate action pattern; and (III) new innate action patterns emerging in a series. As I give examples, I will also try to shed some light on the ethologist's understanding of behavior and how it relates to the ideas of learning theorists.

(I). For examples of classes of stimuli to which an organism is especially responsive and for examples of the corresponding innately pre-patterned responses one has only to look for examples of releasers and innate reaction mechanisms[2] in an ethology text. I prefer to call the innate reaction mechanisms innate action patterns and shall do so henceforth. In the human the basic reaction of distress is very likely an innate action pattern present from birth. It may be considered the "primary emotion," to use a Freudian-type term. Shame is derived during the second year of life from an interaction between the distress reaction, learning, and early cognitive developments in the sphere of social functioning. As such, shame may be considered a "secondary emotion". Like all emotional reactions, both appear to have an aggregate class of static and dynamic environmental features as stimuli to which they are particularly responsive. I do not care to speculate on the particular fea-

[2] "Innate reaction mechanisms" = innate releasing mechanisms plus the corresponding fixed action patterns.

tures of the environment which function as these releasers at this point in the treatise, though may do so later. I shall speculate on the adaptive value of such responses later in this chapter.

It is interesting to note that fear and guilt, which develop later and over a period of time, probably develop from these more basic emotional responses, although each has its own distinctive characteristics. Given the information Piaget has gathered about the general qualitative nature of cognitive development, there are indications that fear and guilt, like shame, may also be "secondary emotions", products of some kind of interaction between the more basic emotions of distress and shame and higher level cognitions. If indeed what I have said is so, some ethologists would call shame, fear, and guilt acquired reaction mechanisms.[3] I see them in part, but not entirely, as acquired action patterns (my term for "acquired reaction mechanisms"). Ethologists believe the development of acquired action patterns is a change in response due to the exercise in some degree or another, of relevant taxis behavior and learning. In fact, more is likely involved in the case of the "secondary emotions" (specifically, the emergence of new innate action patterns, which will be discussed next). Understanding taxis behaviors is central to understanding behavior change. Also, these behaviors have the most similarity to those behaviors studied by learning theorists. The nature of these behaviors will be elaborated soon. For the time being taxis behaviors can be roughly defined as: those behaviors involved in the learning process and modified in part by this learning. The learning process is largely simple associative or discriminative learning. This ethological conceptualization of

[3]"Acquired reaction mechanisms" = acquired releasing mechanisms plus the corresponding acquired coordinations.

taxis behaviors and the developmental process differs from common notions of learning in two regards: (1) More types of behaviors are subsumed under the term 'taxis behaviors', and they are defined and categorized. (2) Taxis behaviors are involved not only in learning but are modified by newly emerging innate action patterns and are involved in a new intercoordination-through-learning process after the emergence of new innate action patterns.

(II). For an example of behavioral responsiveness which changes qualitatively over rather large periods of time but is certainly not solely the result of learning on taxis behavior, you again need only to consult an ethology text. Any of the examples of sensitive periods in the lives of various organisms will suffice. The well known phenomena of "imprinting" are the simplest examples. But even in animals, sensitive periods may span a long period of time. The phenomena cannot be explained simply in terms of learning, but completely new sensitivities to new classes of stimuli (releasers) and corresponding innate action patterns must be posited.

There is no reason to believe that such phenomena do not exist in humans. Some complex human behavior patterns seem to differ qualitatively over time yet in an orderly way. Human emotional reactions are an example of this previously mentioned. Other, clearer examples may be found when one assesses the more important covert behaviors of humans. Specifically, certain changes in human cognition and cognitive processes seem to be due to new innate sensitivities and corresponding innately guided overt behavior changes. More specifically, changes in cognitions and cognitive processes seem to be due to changes in perception, followed by changes in overt behaviors. The changes in overt behavior is then followed by the major cognitive developments. As Piaget has shown, as children pass

through developmental stages, they appear to be preoccupied with the characteristics of objects which pertain to greater and greater levels of cognitive complexity. Correspondingly, as children develop they become less and less "ego-centric". Looking more closely at Piaget's work may provide us with hypotheses about what changes are probably due to new emerging innate action patterns. It is most probable that we will find it necessary to hypothesize new innate action patterns more than once over the course of development.

Complex changes such as those in cognitive processes cannot be assumed to be the result of luck in learning or engineering by caretakers. Ethologists believe that newly emerging innate action patterns may be involved when behavior changes so radically over time. Indeed I believe that this mechanism of new releasers -- new innate action patterns periodically spurs cognitive developments. Piaget's work has indicated that periodically a new class of static or dynamic characteristics of objects becomes the center of attention for cognition. Concentration on the static characteristics is mainly involved in development of <u>cognitions</u>, while concentration on dynamic characteristics is largely involved in the development of dynamic <u>cognitive processes</u>. One should note that although such releasers must be abstracted from the "objective" world, we are often not talking about abstract classes in the familiar senses of the term, though the process does fulfill the formal definitions of the term 'abstraction'. A portion (subset or aggregate subset) of the actual observable environmental characteristics <u>always</u> functions as the class of stimuli known as releasers.

Although I shall want to convince the reader of my view, a very basic note of caution should be mentioned in regard to interpreting

observable behavior as manifesting innate components. Ethologists have found that behavior first seen during a sensitive period may reoccur frequently, but not in an easily recognizable fashion. Although much different, a later reoccurence may in fact be the same basic innate behavior pattern modified by the influence of learning on taxis behaviors, which have not otherwise been modified since the first appearance of the innate action pattern. One must be careful not to unnecessarily infer any new innate elements.

On the positive side: With animals innate action patterns which reoccur always show the more basic elements of the original innate pattern. Actual overt elements of the pattern are still recognizable, although many elements may have been modified ("acquired"). Again, taxis behavior is always involved in developing such acquired behavior and the process involved is simply associative and discriminatve learning. The only shifts in taxis behaviors which are not due to learning are the relatively dramatic shifts in groups of taxis behaviors corresponding to the newly released innate action patterns. [4] (See the footnote.)

The important point I have been trying to make is that it is necessary to make careful and extensive long-term observation to determine what has changed simply by exercising taxis behaviors and by learning AND what involves more for its explanation. With animals

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[4]Either the perceptual biases, which are the direct manifestations of the physiological cause of the most important innate action patterns, or the patterning of responses resulting from the perceptual biases OR BOTH together may be termed "the innate action pattern" in this treatise. Only the patterning of responses (taxis behaviors) is clearly observable and this will be taken into account when a research methodology is suggested at a later point in this chapter. The perceptual biases of which I speak have not yet been discovered due to the inadequacy of the longitudinal data which has been gathered to date.

there are examples of each sort: behavior change which has resulted largely from taxis behavior and learning AND other behavior changes which require we posit (in addition) newly emerging innate action pattern(s) interacting in the process, if we are to have the most scientifically acceptable explanation. As we shall see, the nature of taxis behavior in humans is quite complex and this makes the problem more difficult. In fact, we shall see that overt taxis behavior of a human may change quite radically simply through the exercise and development of covert taxis behavior under the influence of learning. Careful controls have to be established to make sure that new innate action patterns can be properly assessed and posited only when appropriate.

(III). As noted before, there is some good evidence (from Piaget) indicating that qualitative changes in human cognitions and cognitive processes may occur more than once -- in fact, several times. The fact that basic changes in cognitions and cognitive processes occur a number of times and yet so reliably recalls another possibility mentioned earlier in the treatise: Some sensitive periods with their new releasers and new innate action patterns may follow one another in a slow, ordered sequence. These various new releasers and innate action patterns could simply be described in turn or another superordinate mechanism could be posited. It would seem to require some kind of innate adaptive mechanism to control the stage-to-stage transitions and from an evolutionary perspective the latter approach might be justified. Nonetheless, it is adequate simply to describe each innate action pattern with regard to when and under what conditions it emerges, what its releasers are, and how it affects taxis behavior. I believe that innate action pat-

terns, unfolding in an orderly sequence, result in the major cognitive and perceptual developments observed in humans. I shall wait to outline the process until after Freudian theory and Freudian and Eriksonian stage concepts have been examined, later in the chapter.

In summary, as an ethologist I am content to define and describe two mechanisms of behavior change, namely: (1) taxis behavior change primarily by learning and (2) taxis behavior and the learning process at times significantly shifted and guided by innate action patterns and their releasers. Since taxis behaviors are central to any account of behavior change let's define them as well as possible:

A. Taxis Behavior: Well Defined Behaviors Which Undergo the Learning Process

Since the concept of taxis behaviors relates to notions used by learning theorists and since taxis behaviors are much involved in the account of on-going and behavior change, the nature of these behaviors should be elaborated. The two mechanisms of behavior change should then be contrasted. This latter task will be accomplished by clearly defining taxis behavior and the behavior which should be attributed to innate action patterns and then describing how these dynamically inter-related processes of organismic adaptation are actually discriminated during observational studies.

The term "taxis behaviors" refers to behaviors whose exercise is OR ONCE WAS the observable correlate to behavior change and which are the objects of step-by-step behavior change. Ethologists realize that we are, for the most part, studying behavior and we should use behavior in our account of mechanisms of change whenever scientifically acceptable. Taxis behaviors include the organism's

adaptive responses which are most observably interactive with the environment and with each other. When active, they promote behavior change through associative and discriminative learning (hereafter often referred to simply as learning or the learning process).

As we shall soon see, "taxis behaviors" has a broader definition than behaviors traditionally defined and considered involved in learning. More types of behavior are included in the learning aspect of the process of behavior change. Moreover, portions of one's taxis behaviors, and in fact the learning process itself, are involved with (subserve) the other class of mechanisms of behavior. Again, this other class of mechanisms is the innate action patterns, which emerge (are released) at one stage of development or another. Ironically, though we will find the definition of taxis behaviors broad in some respects, at the same time the definition is more specific than that of "behaviors involved in learning" in some important ways.

Taxis behaviors include any of the types of behaviors which may undergo the changes due to learning; but, only some of the behaviors of any given type are considered noteworthy. Only developmentally-fixed species-typical responses to certain stimuli or, more often, classes of stimuli; stage-common aspects of perception, cognition, and cognitive processes (all covert); and overt stage-common instrumental behaviors are considered taxis behaviors. Such behaviors are species-typical behaviors and only species typical behaviors are the subject of an ethologist's study. Taxis behaviors are those species-typical behaviors which undergo the changes due to learning, when defined at any given stage of human development.

Extensive observations must be done to determine which aspects

(actual portions or subsets) of observable and appropriately inferable behaviors are true "across subjects," i.e. are species-typical behaviors. This task is possible when one engages in extensive longitudinal observational studies and uses the well-defined interpretive guidelines provided by a new, more comprehensive set of basic assumptions about human nature. Although species-typical behaviors are determined by studying many subjects, they are by definition characteristics of each individual subject. Therefore the same taxis behaviors may be found in any human subject at any given point in development.

We will discover that all species-typical behaviors are instrumental in that they function to adapt an organism to his environment or serve to promote the organism to his next developmental level (which is also more adaptive). With this in mind, taxis behaviors can be equally well, or possibly better, understood as developmentally fixed species-typical instrumental behaviors and stage-common patterns of instrumental behaviors (also species-typical) which are involved in the learning process.

As noted, taxis behaviors and the learning process are also involved with the other mechanism of behavior change. They promote change by way of the mechanism of innate action patterns as follows: One could say that taxis behavior and the learning process facilitate the integration of innate action patterns with behaviors already present. But it would be more accurate to say that certain taxis behaviors are altered rather quickly and dramatically as a new innate action pattern emerges and then the learning process is guided to further integrate these taxis behaviors with each other and with the new innate action patterns and new releasers. The latter learning and adaptation process occurs because an innate action

pattern has phenomenologically salient releasers, which more than anything else (at the time) guide the development (through learning) of the relevant (affected) set of taxis behaviors. Another similar way of looking at it is to say that a group of taxis behaviors and the learning process in part function to subserve an innate action pattern and allow it a more complete and more appropriate (adaptive) expression.

Again, with the emergence of an innate action pattern, the relevant group of taxis behaviors (and thus the learning process itself) are shifted to adaptively act with the new salient class of stimuli. The shift in the group of taxis behaviors is itself the overt expression of the innate action pattern. In the case of a rigid species-fixed innate action pattern, the shift in the affected taxis behaviors is large and the innate action pattern is relatively inflexible (inflexibly applied). In other cases, innate action patterns alter taxis behavior more slightly (at least in the short run). These latter innate action patterns are more flexibly applied and develop more acquired components. Examples are in order: The species-typical emotional reactions appear to radically affect taxis behaviors and appear relatively inflexible in their action. In contrast, the innate action patterns which spur cognitive developments appear to be more subtle in their effects and often become part of behavior in general.

After undergoing the shift in functioning, the adaptively altered taxis behaviors and the learning process continue more or less as before, resulting in changes through learning and better (more adaptive) intercoordination among the affected group of taxis behaviors. All learning which occurs after and as a result of the shift in taxis behavior is the acquired action pattern.

We should note that taxis behaviors are always the objects of more or less step-by-step adaptive behavioral changes. Even with the emergence of an innate action pattern[5] the shift in the behaviors (including the observable "innate action pattern"[6]) is so adaptive and integrated so naturally that it is usually experienced nonchalantly by the developing individual. Yet, in some environmental circumstances the subject may have a natural "a-ha" experience or sensation due to the newly emerged innate action pattern or may conceivably experience new conflicts because of past maladaptations. Nonetheless, in spite of the fact that changes in behavior due to innate action patterns are rather smooth, it is still possible to differentiate them from simple learning. With the proper set of assumptions, an observer can see any significant unlearned shift in taxis behavior as rather dramatic and only explainable by positing an emerging innate action pattern.

It is thought that a group of taxis behaviors affected by an innate action pattern must adaptively intercoordinate before the next new innate action pattern will emerge.

To better understand the behavior change mechanisms and development we can <u>for convenience</u> divide taxis behaviors into two types. I will call them type one and type two taxis behaviors. Both types of taxis behavior are overt in their first initial stage of development.

In the earliest stage of human development the nature of type one taxis behaviors can be easily and directly observed, for they function independently and are largely overt (in fact, <u>only</u> relevant

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5 Recall footnote #4

6 Recall footnote #4

perceptual biases are covert). The essential character of the other type of taxis behaviors can only be abstracted from observation of groups of type one taxis behaviors. Type two taxis behaviors are actually groups of type one taxis behaviors which have been altered by an innate action pattern and are in the process of integrating with the new innate action pattern. These dynamic subsets of type one taxis behaviors, which I call type two taxis behaviors, are also observable. For although their functioning can only be understood by viewing the group, their innately determined intercoordination and their functioning together is initially overt. Type two taxis behaviors, once shifted or altered by an innate action pattern are thereafter similar to type one taxis behaviors in that they change only as associated or disassociated by the learning process. Both types of taxis behaviors will, with exercise and as the result of learning, become adaptively intercoordinated. As such they often become further integrated with one's perceptual and/or cognitive systems. When this has occurred, they may become covert and need to be inferred in appropriate circumstances. Let's describe each type of taxis behavior further and then see how taxis behaviors may become covert.

The first type of taxis behaviors is the type that intially, and for the most part, have an independent mode of functioning. At birth this type of taxis behavior includes certain simple inborn behavior patterns. Specifically, those inborn behavior patterns which are initially considered type one taxis behaviors are: innate motor responses ("reflexes"), related motor response biases, and any innate perceptual biases. Later in life type one taxis behaviors include any previously type two taxis behaviors which have become developmentally fixed. Type two taxis behaviors and how they become

fixed will be described soon. Suffice it to say that included among the type two taxis behaviors which become fixed are many stage-common behaviors, and those behaviors which when perceptually (or cognitively) integrated become cognitions, cognitive processes, and developmentally-based perceptions.

The reader may object to the definition of type one taxis behaviors because it appears to include innate action patterns[7] which are supposed to be something different from taxis behaviors. But one must understand what is necessary to develop a perspective or theory that involves both (1) behavior change through the exercise of taxis behaviors and learning and (2) behavior change when taxis behavior and the learning process are shifted by innate action patterns: specifically, one must have a base of original taxis behaviors on which to build the rest of the theory. Although inborn behavior patterns and unlearned motor behaviors are certainly innate, they are nonetheless appropriately selected as our original base of taxis behaviors. This is appropriate for they are clearly the innate behaviors which are most directly and independently interactive with the environment. All this is not to say that the situation does not soon change.[8]

The other type of taxis behavior appears during development. They are usually groups of the first type which have been shifted or altered as new innate action patterns emerged. To recognize the essential adaptive character of these taxis behaviors one must view

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[7] In one or both of the senses of the term (see footnote #4).

[8] Of course there are internal states of which the human subject is aware and these will have to be inferred because they are not observable stimuli. But this is very different from the way innate action patterns are inferred because releasers of innate action patterns are always aspects of observable stimuli. Perceptual biases present at birth are considered type one taxis behaviors. They are easily inferred from the subject's overt behaviors, though not objects of the observer's direct experience.

them as a group and note how they function with respect to the new class of releasers. Any new directedness (shift) in their functioning as a group is the observable "innate action pattern". In other regards, these behaviors are the same original taxis behaviors. They may alternatively be viewed as the original type one taxis behaviors but which now act in concert with an innate action pattern in the presence of the new releasers. The releasers are static or dynamic characteristics of objects or static or dynamic features of the environment. As such, the "class of objects" which functions as releasers is an abstract class, in a sense, BUT IT IS ALWAYS A DIRECTLY OBSERVABLE CLASS.

I have said that each type of taxis behavior can become covert. With this in mind one should expect that a portion of the observable or appropriately inferable behavior will be taxis behavior of the first type, functioning directly and independently in response to environmental stimuli. Another portion of the observable behavior (only) will be type two taxis behaviors and will be acting as a group, possibly in sequence, to be in concert with a newly emerging innate action pattern. (The primary adaptive functioning of these behaviors and the primary adaptive value of the learning they undergo will only be clear when the new innate action pattern is understood and when the new class of releasers is abstracted from the observable environmental circumstances.) A certain portion of inferable behavior will still show the distinct patterning due to innate action patterns which emerged in the past. The reasons for this will be discussed later. We shall also find that these covert behaviors are considered type one taxis behaviors, although very clearly derived from type two.

To confuse matters further, many overt taxis behaviors may be

observed to function to a significant extent as both types of taxis behaviors: as type one in some environmental circumstances and as type two in other circumstances. Good examples of such behaviors can be found when one examines emotional reactions. Emotional reactions which act as type one taxis behaviors are exemplified by well-developed ("learned") emotional reactions. At other times, "gut level" reactions to newly perceived circumstances will clearly involve the same emotional reaction patterns, now acting as type two taxis behaviors.

I have said that both types of taxis behaviors can in a sense become covert and must then be inferred in appropriate circumstances. I realize that this will raise criticism but it cannot be avoided. Taxis behaviors, though always initially overt in their functioning (with the exception of perceptual biases present at birth), may become covert. They will continue to function but they will not be observable or abstractable, but will have to be inferred. When covert they will function as developmentally-based aspects of perception and as cognitions and cognitive processes. Let's state how this may occur with each type of taxis behavior.

The type one taxis behaviors, with easily observable independent functioning, may become so well integrated with the perceptual system (another type one taxis system, by definition) that they function largely as aspects of cognition or cognitive processes. As such, they function covertly (are covert behaviors). In effect, the internal processes now substitute for certain external manipulations; we can deal with certain objects (evaluate them) without overt manipulation. The integration of this type of taxis behavior occurs solely through the learning process (i.e., associative and discriminative, or dissociative, learning). The perceptual system, of course, is altered by this learning also.

Many aspects of our cognitions and cognitive processes seem to be acquired, rather than determined by rigidly innate sensitivities (perceptual biases) and innate action patterns. We assume then that much of our cognitions and cognitive processes are based on this type one taxis behavior because it is assumed that all acquired behavior is at one time or other directly manifest as this particular type of behavior. But the picture is somewhat more complex. Recall that some taxis behaviors can function as type one or type two, depending on the circumstances. And also, as we shall see, type two taxis behaviors may become type one if fully integrated and developmentally fixed.

As I've said, the second type of taxis behavior may in a sense also become covert. This is more complex and will require a longer explanation. Recall that in the case of these taxis behaviors, the second mechanism of adaptive change is involved in their functioning. In short, it is necessary to abstract an innate action pattern, a way in which they act with other behaviors in response to new releasers. Much of the adaptive learning these behaviors undergo can only be understood by considering the group of involved taxis behaviors and how they are responding to new releasers. Over time the group of taxis behaviors will become more adaptively intercoordinated and will become integrated with the innate action pattern. In the process aspects of the innate action pattern will eventually become aspects of the involved group of taxis behaviors itself. (More accurately: more and more behaviors will become shifted by the new perceptual bias, which is at the root of the observable "innate action pattern", and the behaviors will become more and more shifted.) If this has occurred to a great extent the involved taxis behaviors act, in effect, as type one taxis behaviors and function independently whenever they are the active responses. A way to under-

stand this is to consider the nature of behavior when the entire shift in behavior due to a flexibly applied innate action pattern is completed. This includes not only the initial alteration in the taxis behaviors but the acquired action pattern resulting from further intercoordination through learning. With exercise and with time, subgroups of the affected taxis behaviors become associated by learning while others have become disassociated. We end up with stable indepedently functioning subgroups of the affected taxis behaviors. Also, at the same time, the environment to which the organism responds has been perceptually or, in later stages, cognitively shifted. The subgroups of the affected taxis behaviors then act independently in this perceptually (cognitively) new environment. They are thus now type one taxis behaviors.

When type two taxis behaviors have adaptively intercoordinated and act independently as new type one taxis behaviors, these behaviors may be further integrated perceptually (and/or cognitively) and as with other type one behaviors described earlier, the perceptual-cognitive changes may eventually result in perceptual-cognitive processes which substitute for overt behavior. This again, is what we mean when we say that the taxis behavior becomes covert.

In short, once the type two taxis behaviors are fully integrated with the innate action pattern and with each other they may become effectively type one behaviors and then may become covert. Since only type one taxis behaviors, or behaviors which function effectively as type one taxis behaviors, are covert, all covert behaviors, except basic innate perceptual biases, are in one stage or another observable independent behaviors. If this does not seem likely it is simply because previously developed, largely covert behaviors participate in activity in later stages of development,

which obscures the significance of on-going activity.

The processes involved with this second type of taxis behaviors was quite complex, so an example would be helpful. Although no studies have been done with this perpective in mind, Piaget's general qualitative (analog) descriptions of major cognitive changes provide us with some apparent examples. Early in infant development it is apparent that the child is attending to certain classes of features of objects he is viewing. At the same time his inborn innate responses -- the original base of taxis behaviors -- are intercoordinating largely in response to these classes of stimuli. Once integration among those taxis behaviors has occurred, these developmentally-fixed coordinations may become further integrated with the perceptual system and become covert. The result of some number of such perceptual (or perceptual-cognitive) changes or developments is what Piaget calls "object permanency". In the next developmental stage a similar process involving an innate action pattern(s) goes on so the child may come to understand very general "class aspects" of objects and so he may understand very basic lawful motions of objects with respect to one another. One must hypothesize classes of stimuli appropriate to the developments and learning. Again the observer will at first see overt manifestations of the learning, but in time certain behaviors will become covert. The subject at this stage and in future developmental stages is complicated by the fact that certain behaviors of the previous developmental stage(s) are now functioning covertly (and some with the aid of memory (a topic to be discussed later)). This raises the important issue of how covert behavior can be inferred and this will soon be described. Fortunately, new developments in each stage tend to subsume and fix past developments so that analysis does not become an impossible task.

This is a good point to note the observable manifestations of innate action patterns. As said before, observable innate action patterns are the result of physiological changes in the brain which create perceptual biases. They can be abstracted from behavior under observation by examining the shift in functioning of groups of taxis behaviors. But observing the pure manifestation of the innate action pattern may in some cases require careful observation. The more flexibly applied innate action patterns will be accurately assessed only if detected early. Flexibly-applied innate action patterns soon begin to "acquire" components; they begin to be integrated with the affected taxis behaviors through learning. The observable innate action pattern without many acquired components may be rather short-lived. Moreover, such flexible innate action patterns may well occur in only one stage or another and this is the only time they need to have any directly observable manifestations at all. More flexible innate action patterns may become well integrated with relevant taxis behaviors; they then effectively become part of, or more accurately, manifest themselves in these taxis behaviors and may then become covert (as described before). Furthermore, the taxis behaviors to which the innate action pattern has been integrated may experience shifts due to new emerging innate action patterns. In later stages of development it may be impossible to abstract or validly assess the original innate action pattern as an aspect of any taxis behavior, unless the innate action pattern's initial overt manifestation had been observed, its "acquired" components monitored, and if its nature as it became covert was assessed.

As noted before, since taxis behaviors may become covert it is important that we define the circumstances under which they may be

appropriately inferred. Also we must have guidelines which allow us to assess how these behaviors may change after becoming covert.:

B. Inferring Covert Taxis Behaviors and Inferring Changes in Covert Taxis Behaviors

In any organism which has had some contact with the environment and which has undergone a response change, covert taxis behaviors are a possibility which must be considered. How is it that we are able to consider such unobservable (covert) behaviors as causally significant factors in any future overt behavior changes? Since we must base all inferences on behavior we have observed, there are only two possible answers. EITHER:

(1) We must assume that any covert taxis behaviors now operating were observable as type one taxis behaviors at one time in the organism's past and, though presently functioning internally as aspects of perception or cognition, they can be inferred as having a similar effect as when last overt because of similar circumstances and because the most acceptable scientific explanation (in terms of behavior) requires it.

OR

(2) At times one may need to infer that groups of intercoordinated covert behaviors are presently functioning as did the innate and acquired aspects of the corresponding overt action pattern, which could last be abstracted from overt behavior. It is more likely that one would need to do this in the case of inflexible innate action patterns than with more flexible patterns. The behaviors of the more flexibly-applied innate action patterns become so well integrated that they result in shifts in the perceived environment to which the organism both-

ers to respond at all. Thereafter, such behaviors are best viewed as type one (independent) taxis behaviors and explanation (1) suffices. Many of the innate action patterns spurring cognitive developments are of this type.

In the case of inflexible innate action patterns, though only somewhat integrable with other overt behaviors and having relatively few acquired components, they may more or less become covert simply because of the fact that they reoccur often enough and consistently enough to be "recorded" in memory along with certain perceived circumstances.[9] The basic emotional reactions are this type of innate action pattern. Such innate action patterns become covert by integrating in a rather unaltered form with the existing perceptual and/or cognitive systems. In such cases such covert behavior might still be best viewed as being a very distinct set of behaviors (similar to innate or still-distinct acquired action patterns as last observed) because they still function together as a group or in sequence in response to rather particular classes of stimuli and are not effective with stimuli in general. In other words, they can still best be understood by recalling the innate action pattern and subsequent learning which in fact defined them as meaningful behaviors in the first place. Such functional groups of taxis behaviors can be inferred if similar circumstances are present and if the most scientifically acceptable explanation (in terms of behavior) requires it. It is assumed that these

[9]The way "recorded" aspects of environmental circumstances key recall from long-term memory will be discussed briefly soon.

behaviors, like other covert behaviors, are type one taxis behaviors (by defintion).

Apparently, although certain inflexible behavior patterns are not integrable with overt behavior they may nonetheless adapt to environmental circumstances due to the thorough evaluation of the environmental circumstances which our covert behaviors provide. Thus inflexible behavior patterns often appear to be more integrable with covert behavior for it is many times (though not always) in this way that acquired aspects of emotional reaction patterns develop.

This above assumption which must be posited emphasizes the importance of long term observation. Also, it restrains speculation regarding the nature of covert taxis behaviors. Another assumption supplements the first, for it provides a sound and well-defined basis for inferring any changes in any behaviors, including covert behaviors:

> An organism may respond to well defined releasers[10] with stage-typical perceptions, cognitions, and cognitive processes (all type one taxis behaviors). Changes in such behaviors must be caused by associative and/or discriminative learning in order to establish newly acquired aspects. An organism, of course, may also respond to releasers with stage-typical overt taxis behaviors, but in addition some of these overt behaviors may be shifted towards new releasers correpsonding to new innate action patterns. Any <u>acquired</u> components of these behaviors will be the product of associative and/or discriminative learning. Covert and overt behaviors may be

[10]Note: Releasers which were effective or which became effective during earlier stages of development remain effective in <u>important ways</u>, though they rarely result in shifts in overt behavior.

intercoordinated by associative or disassociative (discriminative) learning.

This assumption is assumed to hold true for any changes at any time in any overt or covert behaviors. Any covert behavior or any group of patterned covert behaviors must reoccur in exactly the same manner as last observed unless evidence for and evidence of further acquired aspects have in fact been observed. Specifically, for further development, two or more behaviors (overt or covert) must have had the proper circumstances for their functioning and there must be an observable basis in the environment for further learning. This assumption deserves the most careful consideration with regard to inferred covert behaviors which can still be seen as patterns related to innate action patterns or still-distinct acquired action patterns.

Further controls should be placed on any interpretation of behavior. When interpreting taxis behavior we must abide by established and necessarily relevant biological principles: For one, it would be best if we could abide by the principle of homeostasis in all organismic functioning and would seem necessarily applicable.

For the reader who does not fully understand homeostasis, hopefully the following definition will suffice. Principle of Homeostasis (as it applies to psychology): All basic behavior (species-typical behavior) either returns the organism to some steady state or is directly instrumental towards establishing the next level or degree of adaptation. During development it is probable that the latter type of homeostatic behavior shall have to be viewed on two levels: On one level the behavior may serve to better adapt the organism to its present environment. At the same time, elements of the

behavior may be instrumental in promoting the stimulus pattern necessary to release new innate action patterns of the next developmental stage. In this latter regard, the behavior can be viewed as subserving a superordinate system -- namely, the system of innate action patterns.

Unfortunately it will not be possible, at least intially, to give all behavior the proper homeostatic interpretation because superordinate systems controlling behavior and its development will need to become better understood first. Nonetheless, important general patterns and relatively unmodifiable innate action patterns can be given a homeostatic interpretation in the initial stages of study.

Not only will it be difficult, initially, to give all behavior a homeostatic interpretation because we do not understand superordinate systems, but also we are not initially sure which behaviors are species-typcial and which are individualistic. Much confusion can result from interpreting too soon. In the first studies of the human we shall begin to understand superordinate systems and come up with hypotheses as to which behaviors are general species-typical behaviors (present throughout life) or which are stage-common, species-typical behaviors. After further studies we can begin to give homeostatic interpretations to more possibly species-typical behaviors. It must again be noted that in ethological studies invidualistic aspects (subsets) of behavior are not studied, but are considered essentially as random noise. It is this writer's belief that understanding the nature of the species must proceed any indepth understanding of individual characteristics.

There is another important principle to abide by when interpret-

ing species-typical behavior: All basic, species-typical behaviors must be viewed as adaptive. Only this view is evolutionarily acceptable. Behavior may be viewed as adaptive in two ways: (1) Behavior must adapt the organism to the environment. (2) All behavior must also have a "good fit" with other known behavior patterns the organism possesses. In principle, one could simply view behavior as adaptive to the environment, if indeed we could somehow intuit what is important in the environment as a whole. But, since we are not blessed with such a gift of true objectivity, we must take both of the two views of adaptive behavior. In short, we must look to the organism for clues about what "the environment" is. Yet, one must not lose sight of the fact that to be in accord with the adaptive principle, all behavior must be hypothesized to have very appropriate releasers (stimuli or classes of stimuli) in the environment. These releasers must be observed as such.

As with the principle of homeostasis, only general or relatively unmodifiable behaviors can be given a fairly good adaptive interpretation at first. Again, after initial studies, hypotheses can be drawn about how the adaptive principle can be further applied.

Abiding by these two well-founded fundamental biological principles will allow future scientists to avoid the recent tendency of simply comparing all behavior to phenomenological norms. By this, I mean the prevalent tendency to compare all behavior to standards which are based on a collection of various hard to assess facts, incorporated into a descriptive model of normative behaviors. The normative, common or typical, behaviors are described with regard to how they appear to function in adults during periods of short-term observation. Such practice is most clearly typified by the work of

modern social cognitive psychologists. This tendency has always resulted in views of human functioning as either: normative (typical) which, though described, is rather uninteresting and unexplained, OR irrational, and only thus is more amenable to research and explanation. This kind of view has always bothered me, not only because psychologists become prone to view humans as a little too irrational on the basis of their studies, but because a good informative account of the nature of the well-functioning individual is always lacking. In making this criticism I am reminded of a quote by Emerson: "Away profane philosopher, seekest thou in nature a cause? Thou must feel it and love it; thou must behold it in a spirit as grand as that by which it exists, ere thou cans't know the law."

At this point, the reader may still have questions regarding what characterizes a simple taxis behavior (type one) as opposed to taxis behaviors which are being affected by an innate action pattern. How to differentiate simple, independent taxis behaviors from the observable manifestations of an innate action pattern is a very important question and requires a more complete answer than one can obtain from the informationo given so far. Let's review the nature of taxis behaviors and innate action patterns for this purpose and at the same time cite information on how these behaviors possibly relate to memory. I will then close this section of the chapter with a view on the evolutionary significance of the behavior we have been discussing.

C. Differentiating "Innate Action Patterns" and Independent Taxis Behaviors During Observational Study

Simple (independent, type one) taxis behaviors are in fact those of one's behaviors which are simply "being acquired", by being

associated together or disassociated. The actual physical acquisition is some structural or chemical change which is not observable. Simple taxis behaviors can be characterized as responses which are in the process (again, simple learning is the process) of integrating with one another in response to perceptually or cognitively similar, but not identical, environmental circumstances. Of course (in fact, by defintion), similar releasers are involved. Through this process certain environmental similarities are discovered; thus, alternatively, this aspect of taxis behavior functioning may in part be viewed as further integrating perceptually or cognitively similar aspects or circumstances of one's environment.

To complete the picture of this aspect of taxis behavior function we must note that, at the same time, different classes of stimuli in the environment are being defined as certain taxis behaviors are found ineffective when applied with each other. This will result in discriminative learning and in this way taxis behaviors will become disassociated. Of course, it is the corresponding aspects of the environment which will become disassociated and discriminated.

Simple independently functioning taxis behaviors adapt an organism to simple new patterns of stimuli in the environment or better integrate the organism with aspects of a rather familiar environment by their exercise. In contrast, when taxis behaviors have been shifted in their functioning (or response characteristics) by an innate action pattern, they will slowly integrate themselves with the new or relatively new innate action pattern and thus better integrate the organism with the more or less general environmental circumstances in which it finds itself. Phenomenologically these taxis responses are responses to what is significantly new to the subject in what would earlier have been viewed as environmental circum-

stances very similar to those previously experienced.

The human subject is aware (cognizant) of some of the functioning of taxis behaviors which have most recently developed or as they are still developing. But the human in the early stages of development is never aware of the behavior patterning because he is not aware of what further adaptation it will bring. Nonetheless, in the proper circumstances, the subject is very aware of the releasers as important stimuli, though one should not expect them to be viewed as socially important, and thus, regarded as important by the subject when and if he is questioned. Humans are simply very aware of the releasers and this will be reflected overtly by the attention given to these stimuli and by some overt taxis behaviors. We might never become aware of the patterning of the behavioral responses unless we study psychology, for the patterning oftentimes roughly corresponds to what becomes the pattern of reality itself.

As taxis behaviors, including, of course, well integrated innate and acquired action patterns, become well established they oftentimes become further integrated and come to function as part of our cognitive-perceptual system. From another standpoint, these patterns of reacting, once established, result in stabilized releasers. These releasers, of course, have acquired components corresponding to the species-typcial acquired action patterns. At one time or another, we are particularly aware of the stabilized releasers and acutely aware of their utility for gaining access to the representations of past associations and behaviors in long-term memory. Because of their utility in fulfilling this function, the neural "traces" (representations) of the stabilized releasers appear to be stored or integrated in a part of the brain that functions as a go-between between short-term and long-term memory. It seems that re-

presentations of relatively new, and and newly stabilized, releasers become integrated or incorporated with the representations of releasers of past development in a special functional part of the brain.[11]

The integration of releasers is a basic perceptual learning process and probably has its physiological basis (referred to in the last paragraph) in the temporal lobe of the brain, where evidence of "memory probes" has been shown.[12] While our cerebrum may reflect all our perceptual experience and associations, it is the "probes" we use to make new (present) meaning out of what we have "stored". The "probes" are our access to long-term memory. Our short-term memory, our working memory, is normally of very limited capacity, but this assures that we deal cognitively and perceptually with a limited amount of stimuli and a correspondingly limited amount of taxis behavior. Short-term memory can access portions of long-term memory through the use of the "probes". Which "probes" are used depend on what is, or what has recently been, the subject of our attention. The limited capacity of short-term memory is an especially elegant adaptation when considered along with the large capacity of our cerebrum and its probes, and the largely innate integration of all three systems with our system of emotions. It assures that the acquired aspects of the adaptation process are carefully regulated.

D. The Adaptedness of Behavior

Earlier I said that innate action patterns differ in what I term "flexibility". As I noted before what this actually means is

[11] Atkinson and Shiffron, Scientific American, August, 1971.
[12] Ibid.

flexibility of application, or with regard to the observable innate action patterns, how flexibly they are "released". I noted that the more flexible innate action patterns will become more thoroughly integrated with overt taxis behaviors and will become aspects of, or will be manifested by, more of one's stage-common taxis behavior. Other, more rigid, less flexibly applied, less easily released innately guided taxis behaviors achieve some integration perceptually and cognitively, but do not often become aspects of other stage-common taxis behaviors. What is the adaptive "purpose" in this; how does the fact that some innate action patterns come to be generally applied, while others are fixed and respond only to rather particular and definite circumstances, aid in adaptation?

Let's look at examples and see if we can speculate on the answer to this question. Distress and shame are relatively fixed responses, showing the mark of relatively inflexible innate action patterns. So are fear and guilt and other less important "secondary emotions". In contrast, the innate action patterns which eventually result in cognitive or perceptual developments become so pervasive that they determine the face of reality itself. How might this be adaptive?

Emotions most often occur in social situations or when one desires to return to a real or imagined social relationship. One might hypothesize that we need to indicate our difficulties in maintaining certain primary relationships in reliable and socially recognizable ways. Emotions may serve as an automatic mode of communication between ourselves and others (or, upon reflection, between ourself and imagined others). In contrast, cognitive processes are never clearly manifest to others who are not intentionally engaged in extensive long-term observation. Cognitive processes are not in-

nately communicated and much of the development of cognition or cognitive processes is therefore not normally perceptible to others. They are guided in their development and then on a continuing basis by subtle innate action patterns (innate perceptual biases), which are nonetheless of great importance.

It is necessary that we maintain social relationships with our fellow creatures and that we have the ability to compare ourselves with others and model their behavior. Yet, experiments have demonstrated that even modeling may not be manifest. Our reactive emotions are apparently sufficient for maintaining social relationships. They act as easily recognized symbols (releasers) as others assess our behavior and when we assess our own behavior or the behavior of others. There is, of course, some evidence of some flexibility even in these relatively fixed action patterns, for these reactions differ reliably with age. While maintaining a certain constancy of form, the reactive emotions may change in some respects due to the change in interactions with others and the environment accompanying cognitive developments.

Chapter 1, Section II

Critique of Freudian and Eriksonian Theories

Freudian and neo-Freudian theories give a general appraisal of human development and personality and indeed are uniquely noteworthy as important attempts to deal with the subject as a whole. But, in spite of the sensitivity, and even the qualitative insightfulness, of their phenomenological descriptions, their explanations for the phenomenology are not, for the most part, well-founded. In other words, their interpretations of causes of behavior are not well-founded.

I shall begin by describing and offering a critique of the general characteristics of Freudian personality theory. Many of the same general concepts which I shall examine can be found in neo-Freudian theories. We will then take a closer look and examine the classical Freudian stages of development and also Erikson's stages of development. I shall then present an alternative viewpoint on similar matters. There are, of course, neo-Freudian theories other than Erikson's, but since they are all similar from an ethologist's point of view and since Erikson's theory is widely known and accepted, it is the one I choose to examine.

There exists very little data upon which to base any accurate comprehensive description of development. Thus, my alternative explanation of developmental stages will be brief and of a general and somewhat speculative nature. Though my viewpoint will be of the most general nature, it will nonetheless be based, as much as possible, on the organism's relationship with its environment. It will be an empirically based interpretation resting on internal (covert) behaviors only so much as it must. Covert behaviors will be de-

scribed in only the most general terms and will always correspond with stimuli in the environment. It is not that I believe that covert behaviors are not important. From what I've said earlier in the chapter the reader knows I believe they are of the utmost importance. But one should begin by describing the empirical relationship of the organism to the environment. Any further speculation can wait. Since the basis of all behaviors and behavior changes has already been defined, a good scientist will wait until he has observed the organism enough to draw justifiable and practical hypotheses about the specific nature of covert behaviors. It would not be prudent to speculate any more than necessary to deal with the issues at hand.

A. The General Nature of Freudian Theory

Freud and his followers appeared to take a broader view of human development which would seem to allow for an open-minded assessment of all possible types of innate behaviors and all possible mechanisms of behavior change. Unfortunately, a large part of the data used to support Freudian (and neo-Freudian) developmental theories was collected during the interview session or modeled on such behavioral data collected. Thus, we would not be surprised to see behavioral processes and mechanisms of behavior change modeled on short-term processes when the theory is used to explain the origin of specific behaviors or behavioral changes. Once again, one can readily find indications of time-biased interpretationos of behavior. As was the case when behavioristic notions were reinterpreted, an ethological reinterpretation of Freudian theory will allow one to avoid making any unwarranted preconclusions about types of cause-effect sequences based on a limited sampling of behavior.

On the positive side, Freud and his followers did attempt to take some assumptions about human behaviors based on the necessarily applicable biological principle of homeostasis. But, they also modeled behavioral processes and mechanisms of behavior change on the principle of conservation of energy from the physical sciences. And, the way this was done was not well-founded. It was posited that a certain amount of "libidinal energy" is constantly present. Though certain environmental stimuli were thought to act as quasi-releasers (including, most particularly, the erogenous zones) and thought to heighten libidinal drives, there were always libidinal energy and organismic needs that could be called into play to explain developmental activity which was not directly hinging on interaction with the environment.

To add empirical plausibility to this latter practice, people were often cited as the naturally chosen, "best" sources of libidinal gratifications whenever possible and plausible, though classes of inanimate objects were sometimes cited in this regard. The process of displacement was often involved. Displacements were thought possible whenever the "real source" of libidinal satisfaction was blocked and its attainment was prevented by factors (esp. caretakers) in the environment. Some of this displacement activity was adaptive and when this was the case the "energy" was said to be sublimated. Sublimation was possible because of the human ability to "reason" and "reality test". Humans, they said, have these abilities as a result of ego development. But reasoning abilities were rarely considered to have adaptive functions of their own; in fact, such ego functions were energized when direct and immediate gratification of the basic libidinal needs was not allowed for by the environment or by one's parents or caretakers. Reality was incorpor-

ated (knowledge of reality was gained) only as was necessary in this regard. The actual matters reasoned about were poorly defined and the reasoning processes themselves were poorly defined. Moreover, it can be said that the reasoning processes of the ego were largely modeled on the adult understanding or assessment of the environment and even the "wishful thinking" of the id was sometimes modeled on adult needs. The theory did require that one consider the child's situaiton and take certain past and present developmental conflicts into account but did not require much else; other considerations taken into account vary from theorist to theorist, but they are never well defined or sufficient.

Finally, the main effect of satisfying one's basic needs as best as one could was the "reduction of energy". All behaviors were directly linked to this aim. Even the development of the capacity for abstract thinking, with the advent of the superego, was viewed primarily as serving this purpose. Like ego functions, the superego functions exist largely because they are forced to exist. Only through ego behaviors and superego type behaviors could the various drive energies find ways to be reduced, given societal inhibitions and given "reality" as it is.

Most everyone has some ideas of the problem with this outlook, but they ought to be enumerated.:

(1) Freudians and neo-Freudians describe the human as having covert behaviors which are not highly adaptive. They, for the most part, simply allow the subject to adapt as he must. And, they are often learned inhibitions, at odds with "natural aims". The degree of adaptation, in theory, can vary widely depending on the care the child receives. But even after considering the best care, one gets

a picture of the subject as an organism which retains irrational wishes, that cannot be satisfied, and which has internal processes that inhibit desired gratifications. This view is in sharp contrast to what ethologists have observed regarding the behavior of other animals. Virtually all species-typical animal behaviors are more adaptive than anyone could have imagined.

(2) "Energy" is a concept that always needs development and refinement. In the case of the Freudian and neo-Freudian concepts, the energized behaviors should have been better defined; this is to say, they should have more accurately described environmental releasers. To an ethlogist, all behavior must be directly interactive with well defined aspects of the environment and innate action patterns must be released by environmental stimuli or classes of stimuli. The patterns of behavior which follow should have a clearly adaptive function or lay the groundwork for other more adaptive behaviors. No "pre-programmed" behavior without clear cut environmental releasers should ever be posited. Even behavior which is prompted by internal physiological states must be released by (or if you prefer: "released on") features of the environment. Moreover, all releasers should be ecologically appropriate, given the organism's niche and his other behaviors.[13] Only such a view of behavior abides by very basic evolutionary principles.

(3) Freudians never demonstrated that behaviors could best be described in terms of the few well-defined releasers they did propose -- namely, the erogenous zones. Because of this, their other dynamics of behavior are then suspect from the start.

(4) Because some of the Freudian and neo-Freudian concepts re-

[13]The human niche is the whole-world niche.

quire little empirical support (little evidence), they put few interpretive restraints on the way covert processes should be viewed. This is an especially important problem in regard to the very important unconscious processes or mechanims. Unconscious wishes, often viewed as irrational, were interpreted as the result of what were largely or even entirely covert processes. And this was often done using an adult model of cognitions and cognitive processes. Moreover, "unconscious thoughts", often of a non-rational nature, were frequently posited, though often implicitly, and these were similarly interpreted.

Today we know that the use of adult processes as a model for childhood processes is most often unacceptable. But this may be the least of the problems with the Freudian interpretation of unconscious processes. Given the perspective on behavior and behavior change presented earlier in the chapter, it is highly questionable whether "unconscious wishing" can be considered as fundamentally the result of covert behaviors. No covert processes, considered alone, can be accurately characterized as "wishing", which has an effect on the organism. Furthermore, there are certainly no covert, unconscious processes which can be considered non-rational or unrelated to rationality. Let's examine the problem further and then see what types of circumstances and behaviors can most closely fit the description of "unconscious wishing".

Behaviors must undergo extensive development if they are to come to have covert counterparts and must undergo even more development if they are to function automatically as unconscious covert behaviors: Recall that all covert behaviors must first be overt, and integrated (or intercoordinated) amongst themselves, before becoming cognitively or perceptually integrated (before developing cogni-

tive or perceptual counterparts). If all this has occurred such behaviors may cease to have overt manifestations and have a continuing functioning only through corresponding aspects of cognition or perceptual processes. It is still later that they may be further integrated, specifically when subsumed by new cognitive or perceptual developments. And it is only at this point that they function as unconscious (automatic), covert cognitive or perceptual directives and act to determine what aspects of the environment the organism reacts to at all. As such, they are best understood as fixed aspects of perception and cognition (with corresponding fixed releasers) and not as "wishes". Moreover, such behaviors will develop only if they are normally adaptive or based on a stage-typical integrative capacity which, no matter how uniquely applied by a given individual, has an adaptive functioning similar in all members of the species. Such covert, unconscious processes of thought or perception can never be understood as primarily irrational or non-rational. The impact of covert cognitive-perceptual directives on which aspects of the environment are reacted to and which are not is not certain, but one may be sure that a consistency in overt behaviors must be involved in any maladaption (irrationality) which continues to affect the individual.

Can recall from long-term memory lead to maladaptation? Can this be the fundamental source or cause of irrational, potentially harmful "wishful thinking"? The ethologist's answer to these questions is a firm "no". Recall from long-term memory cannot occur (or be considered to have any effect) unless overt behavior also reflects a concern with the key aspects of things or events which are recalled. There are distinct limitations regarding the way long-term memory be "probed", though in a well adapted individual this

may be a subtle process involving numerous cognitive processes.

Is it possible that overt behaviors may be involved in unconscious processes and is it possible that they may be described as non-rational unconscious "wishing"? The answer is clearly "yes" on both counts. First, there are groups of behaviors which when abstracted from behavior in general and viewed operating together could be characterized as non-rational, and in some eventualities, even irrational "wishing". It is conceivable that if not further intercoordinated in the course of normal development they could result in serious adaptational problems. Furthermore, the possibility of an individual being unconscious or unaware of the nature and directedness of such overt behavior patterns is not unlikely. Recall that behaviors are often patterned innately and the developing individual is not aware of this. As in Freudian theory, the ability of the individual to intercoordinate the affected taxis behaviors, and these with other taxis behaviors, depends somewhat on past adaptations. If past adaptations have been poor or not completed, further behavioral intercoordinations may be difficult. Not being aware of the nature of one's behavior is non-rational in the sense that it implies one is not evaluating his overt behavior and the environment well (that is, covertly). This, in fact, is likely the case if an individual's behaviors in the environment are not well intercoordinated, for behaviors in such a state are not easily integrable "into" cognitions and cognitive processes. They will therefore not be well understood in any way. If the same aspects of the same environmental objects continue to act as releasers of the same basically innate action pattern and if further integration of this innate action pattern and the affected taxis behaviors is slow or not forth-

coming, any adaptive problems will continue and may get worse as new innate action patterns emerge. Further integration of these behaviors or at least a consistency in these behaviors must somehow occur, if one is to have further cognitive development in this area of functioning and if one is to have further understanding of one's own behaviors.

The concept of "unconscious thinking" is even more unacceptable than that of covert unconscious wishing. It is not only a contradiction in terms, but in fact there is nothing that this term may describe in a useful way. "Thinking", in any meaningful sense of the term, cannot be considered as anything but a conscious, rather deliberate process. Also, contrary to the impression one might get from Freudian theory, thinking is a highly adaptive process in its own right. Even in cases of serious maladaptations, it is, in general highly adaptive. This is because the system of cognitions and cognitive processes is for the most part a system which is pervasive in its effects and one which originates as the product of the integration of the perceptual system with a large, well integrated system of overt behavior. In the process, you will recall, the overt behaviors often lose their overt functioning and in effect become aspects of a perceptual and/or cognitive system which manipulates aspects of the environment internally. (It should be obvious that long-term memory is necessarily involved in this process.) Both the integration of overt behaviors with perceptions, etc. and the emergence of new behavioral patterns which shall determine the subsequent steps in perceptual-cognitive development are innately controlled. Purely developmental thought maladaptations, not due to physiological abnormality, are very limited in scope when compared to the positive adaptive value of cognitions and cognitive processes.

It should be clear by now that any explanation of the genesis of developmental problems due to experiential factors cannot be given in terms of maladaptive thought processes alone. Environmental factors and other behavioral systems must be cited in order to explain the development of any adaptational problems of that sort. Most basically, this has to do with the fact that the environment must mediate all behavioral interaction and development. But it may be useful to note another ethological assumption not yet stated. It is an ethological assumption that species-typical conflicts, including those which may result in psychological maladaptations, can only be interpreted in terms of conflict between two or more different innate or acquired action patterns.[14] The ethological view is that only such conflicts can result in the common developmental maladaptations which are not physiologically based. Given this view cognitions and cognitive processes can directly result in such conflict only when: two (or more) largely separate cognitive systems, which have developed from two (or more) distinct innate action patterns that had become incompatible while functioning under different environmental circumstances, are released simultaneously when circumstances (releasers) become "mixed". It should not be hard to believe that conflict usually occurs between the innate action patterns or acquired action patterns which have not yet been intercoordinated and integrated cognitively. For example, conflicts of this sort may frequently occur during development when an individual's emotional reactions are not suited to a relatively new level of general behavioral functioning resulting from the emergence of a flexibly-applied innate action pattern.

[14] An acquired action pattern is an innate action pattern as it is after undergoing the learning process.

We have concluded that when behavior is closely examined, cognitive processes are never seen to be the cause of maladaptations. But the importance of cognitive processes for adaptation must not be overlooked. Thought processes are covert taxis behaviors which are always applied in developmental conflicts and normally aid in their resolution. In cases where maladaptation occurs, thought processes, at least in the early stages of the problem, accurately reflect both the problem, from the developing individual's cognitive perspective, and any adaptive inabilities of which he is aware. Also therapeutic resolution of difficult adaptive problems will be aided by helping the subject to guide the application of all relevant taxis behaviors, including thoughts. Thought guidance aid's in the subject's assessment and proper intercoordination of the conflicting behaviors.

(5) Freudians and neo-Freudians spend much time analyzing conflicts. These conflicts are conceptualized as conflicts between ego functions and id-type behaviors (libidinal drives) or between superego and id-type behaviors. Most often, most of the behaviors involved are thought to be covert. Emotional responses are considered as factors involved in conflict and in the interpretation of conflict, though they are, for the most part, simply viewed as giving the conflict its impact. Ethologists have found that scientifically meaningful conflicts (those which are species-typical) occur only between different innate action patterns and/or between different acquired action patterns. In addition to the fact that only such conflicts will be species typical, only such conflicts will be important. In contrast, in the Freudian view, ego and superego behaviors involved in conflicts have no innate patterning of their own. Recall that they are in effect viewed as 100% acquired, derived from

the basic libidinal drives present at birth. Freudians interpret the results of supposed conflict and emotional responses after the fact and in such a way as to fit their theory.

Ethologists have observed five or six results of conflicts between innate and/or acquired action patterns. Two of them are most interesting: One possibility is that when two incompatible innate (or acquired) action patterns are both released by the circumstances (stimuli or classes of stimuli) in the environment, a third patterned response (innate or acquired action pattern) may be released. Of course, since its threshold has been reached by the circumstances (now including the conflicting behaviors), this third behavior pattern is innately adaptive. An excellent human example of this occurs when a young child's assessment of the environment and his other relevant taxis behaviors (or his assessment thereof) conflict. His response is often distress. This third behavior pattern is frequently effective and adaptive. It signals the conflict to an adult and the adult aids the child in dealing with circumstances. It should be clear that emotional responses have effects which are far more specific than simply giving a conflict its trauma value.

The other interesting possibility occurs more frequently in more mature children or adults. It occurs when one's assessment of the environment is in error and the behavior one attempts (or would attempt) is (or would be) very ineffective or inefficient. In the sufficiently mature individual this will result in the application of other basic taxis behaviors in order to reassess and learn what went wrong.

It is important to note that it is possible that sometimes either or both of the two noted reactions to conflict may be applied

in the same circumstances. The fact that this is true may facilitate and help account for certain acquired action patterns -- in particular, acquired emotional reactions such as contempt and anger. These seem to be the result of an intercoordination of aspects of the basic emotion of distress with certain cognitions and cognitive processes. (Again, recall that cognitive behaviors are taxis behaviors.)

B. The Freudian and Eriksonian Stages of Development

Next we will take a look at the Freudian and Eriksonian understandings of stage-typical behaviors. Then I shall attempt to present the ethological alternative interpretations of what may have been their observations. The ethological perspective will still make use of a stage concept, but it should be viewed partly as a tool for summarizing the observations of periods of human development. Since I am going to be speaking to the issue of stages, before beginning, I ought to say more about the ethological view on what is known as the continuity/discontinuity issue regarding development.

Taxis behaviors are normally very adaptive at any given point in development; innate action patterns are released and are developed in an eminently adaptive way; and any new innate action patterns that unfold later during development are also normally and in most regards very adaptive. All this implies smooth functioning and smooth development. Looking at it from another standpoint: Releasers are specific stimuli or specific classes of stimuli encountered in various species-typical circumstances. These specific stimuli are replaced by new classes of releasers only because they yield im-

proved adaptation or immediately result in new behavior and in behavior changes (through learning) which yield improved adaptation. Again, from this point of view, one should expect a rather smooth functioning and gradual development.

Yet, although development most often and in general appears fairly smooth and continuous, major shifts in behavior may be detected during close extensive longitudinal observation. Radical, qualitative changes in the nature of overt behavior will be seen over time as the result of the behavioral shifts. Soon qualitative changes in covert behavior will also be inferable. Given these facts and the fact that one must summarize one's observations, it is impossible to describe human development without speaking in terms of stages. Now let's look first at the classical Freudian stages and then look at Erikson's stages, then the ethological viewpoint will be presented.

Freud's Oral Stage. Freud believed that the developments in the first year of life could be described as centered around oral-type activities. Apparently because of the young organism's "fascination" with the activities of his mouth, all activities were patterned after what the mouth does to get what it wants. In short, the organism's behaviors were all incorporative in some way or other. This was the mode of satisfying all needs. Somehow, all an infant's "needs" at this stage were seen as being best characterized as "basic bodily needs", much like eating.

Inability to develop satisfactory ego functioning during the oral stage could result in continued operation of oral mode behaviors. This would be so in spite of conflict (with "reality") and anxiety because any other type of behavior would yield further uncer-

tainty due to the fact that "reality" had not been "sufficiently" or "properly" incorporated. At other times, an individual with poor ego development would still develop the ability to function at a higher (more adaptive) level, but because of a weak or uncertain "foundation" he could easily regress during times of conflict.

Even an adult who had experienced just a small but "significant degree" of trouble during oral stage development may be persistently "love starved". This may result in a passive and dependent person lacking in self-confidence or, oddly enough, in an aggressive or greedy individual. Which result depended on the "severity" of the problems and when during the first year the problems in adaptation developed. Improper care of insufficient care by parents was always cited as the cause of the problems. In severe cases of maladaptation, any significant affront to what the individual views as is reality (what he has managed to incorporate) is responded to with panic and defensiveness. Primitive defense mechanisms predominate. Because of the irrationality of this behavior, in later childhood or adulthood the individual may engage in severe self-recrimination.

Freud's Anal Stage. In the second year of life the mode of activity is modeled on the ability to control the anal sphincter. This is the anal stage. In Freudian literature it seems accurate simply to say that the child is interested in what he can control in general, though conflicts are very likely to occur with regard to control of the anal sphincter (i.e. with toilet training). Just as the mouth was the erogenous zone in stage one, the anal sphincter is the erogenous zone and the center of attention throughout this second stage of development. If parents are too harsh during this stage, the child may develop an aggressive mode of behavior towards authority which will be hard to supplant and, even if overcome, may

appear in later conflict situations (i.e. the individual may at times regress and show behaviors typical of this early stage of development). Thus, once again an early mode of functioning may continue into adulthood.

Another possible outcome of maladaptation during the anal stage is that an individual may value "obvious" and trivial possessions or normally unimportant personal characteristics as reflecting important personal traits. He may be unduely sensitive about such things. Correspondingly, all behaviors of others which are potentially relevant to these bases of self-attributions are viewed defensively and often as judgments on his self-attributions and self concept. He responds with defense mechanisms, though these mechanisms are not as primitive as those used by individuals with serious oral fixations.

Freud's Third Stage, the Phallic Stage. The genital area is the erogenous zone of this stage. This is by far the most important stage in the Freudian theory of development, lasting from about three years to six years of age. Essentially, this is the most important stage because many problems of conscience stem from maladaptations during development in this stage. Between three and six years of age a child develops abstract abilities (superego functions and related ego functions) and is able to consider his behaviors and their consequences before possibly attempting to imitate the more complex behaviors of his same sexed parent in many respects. The basis for the cognitive abilities involved is very poorly defined and these abilities are poorly described. Because of the child's "preoccupation" with the genital area, included prominently among the behaviors he considers are sex role behaviors. This leads, of course, to conflict (much of it supposedly covert from the very beginning (!)) and to a system of adaptive controls on behavior known as

the Oedipus (male) or Electra (female) complex. The complex develops as the child experiences interpersonal and intrapersonal conflict because of the fact that he cannot do everything that the father (male) or mother (female) does.

Because of the child's newly acquired abstract capacities, he is able to imagine conflicts resulting from some kinds of behavior, especially those associated with his sex role or with the sex act. Correspondingly he develops prohibitions, not only against rather particular and simple types of overt means-ends behaviors as in the second stage of development, but against what can best be viewed as entire classes of behaviors, including certain naturally occuring thoughts (!). Such abilities are important examples of what is meant by superego behaviors or functions. This ability has first become significant and important in this stage and thus the superego is said to originate in this phallic stage.

To give a more balanced account of superego functions one must note that the formation of ideals is a positive result of superego functioning. Identification with the same sexed parent, as much as appropriate, is aided by developing superego ideals.

It is the numerous possibilities for errors in prohibitions or errors in sex role identity that make such problems in this stage the cause of many future problems (maladaptations). Errors in superego prohibitions and superego ideals are seen as the source of unwarranted prohibitions and/or guilt in later life. Guilt is a primary characteristic of neurotic behavior. Since guilt, in contrast to shame, first appears during the phallic stage, it is assumed that this stage more than any later period of development is the most likely source (of the cause) of neurosis. It is unclear how pro-

blems in earlier stages might facilitate inappropriate guilt responses and maladjusted superego functions. Problems from this third stage of development may lead to problems in either later childhood or adulthood, although the likelihood of problems is greater in adolescence and early adulthood when sex roles again become an issue for the developing individual.

Freud's Stage Four: Latency. Latency is the developmental period between ages six and twelve (approximately). It is viewed as a calm and undemanding period. More and important basic skills are developed, but sex role development is slow and gradual for the child thinks little about such aspects of himself (self-identity). Since adaptational problems are most commonly associated with more intimate interpersonal behaviors, such as those developed in the first three stages of life, this stage is not closely examined by the clinically-oriented Freudians.

Freud's Stage Five: Adolescence. Sex role behavior becomes important once again in adolescence. One's most basic skills have for the most part been developed by now. The adolescent experiences a growth spurt and somehow becomes aware of conflict-laden aspects of all his previous developmental stages. Self-identity as a whole, along with a concern with sex role behaviors, somehow becomes an issue. Such developments are thought to be due to greater cognitive capacities (poorly defined) and also in part due to an individual's reaction to growth and hormonal changes. An individual experiencing the developments of this stage comes to consider himself with regard to acting as an agent in society. Also, he must resolve any problems he may have which may keep him from having a satisfying relationship with members of the opposite sex. It is important that one's basic feelings about oneself or others or one's conscience do

not prevent one from establishing healthy and satisfying relationships with others. (Relationships with those of the opposite sex are assumed to be more likely problem-ridden.)

It is developments during the early stages (stages one, two and three) which Freud considers most significant for character development. Good interpersonal relationships in adolescence are based largely upon these earlier adaptations and developments. Adolescence is also a special stage for it is a period when any problems an individual has developed can no longer be "latent", as in stage four, but will become manifest.

Erikson. Erikson is a neo-Freudian. He takes both a psychosexual stage outlook and a psychosocial stage outlook on human development. Erikson's psychosexual perspective, which is not nearly as popular as his psychosocial perspective, is very similar to Freud's. Suffice it to say that he views the same general modes of intimate ("sexual") behavior (behavior with regard to caretakers) operating in the earlier stages of human development, but he shies away from centering the modes of behavior on particular "erogenous zones". He does not believe that conflicts involving behavior associated with the erogenous zones are so especially problem-laden. He is content to view children of different ages and at different stages as having different modes of adjusting to the intimate interpersonal aspects of his world.

As indicated, Erikson, unlike Freud, does not believe that all behavior is best understood in terms of psychosexual theory. In fact, he thinks that in most cases more can be understood by taking a psychosocial view. He is famous for his psycho-social stage theory of the "eight ages of man". But even this psychosocial

theory is similar to Freud's theory in that it is a stage theory and he believes that instances of conflict, or rather, periods of conflict, are times of pivital change for better or worse. Like other "ego psychologists" (e.g. Rapaport and Hartmann) and in contrast to Freud, he emphasizes a more "active role" for the subject, and correspondingly, ego functions become more important. References to behaviors stemming from the drives of the id (libidinal drives) or relating to superego functions are rare (such references are completely absent in the writings of some ego psychologists, except to explain what once had been viewed as id behaviors or superego functions in terms of a developing adaptive ego -- see Rapaport, 1960). The organism is seen adapting to its world without being impinged on by impatient id "drives". Moreover, the resulting view is of the human subject with an ego and a well integrated conscience developing from ego functioning (cognitive processes functioning) in the world.

Erikson's view stresses evaluating the adaptive functioning of the organism at present, rather than concentrating in problems that seem somehow to be the result of past development. This is better understood with psychosocial stages. Past developments and maladaptations are still seen as very important, but past conflicts and the nature of their resolution very often have an effect which is more directly related to present behaviors and adaptations. In Erikson's theory parents and caretakers are just some of the important social contacts a child has.

Each of Erikson's stages can be characterized by a pair of descriptive nouns which supposedly characterize the most likely positive or negative personal characteristics which may result from what he sees as the basic type of identity (self-identity) conflicts common to the stage.

Erikson's Stage One: Basic Trust vs. Mistrust. This stage or developmental period corresponds to the first year of life, like Freud's oral stage. But as in all Erikson's stages it is social behaviors in general which are central. The major conflicts of the first stage are between behaviors which promote establishing basic interpersonal trust and others which do not. Serious pathological results similar to some Freud described (and noted earlier) could result from problems at this stage. But notable in Erikson's major book, Childhood and Society, is the notion that a problem will persist into later life only if somehow fostered by the family or society in which the individual lives.

Stage Two: Autonomy vs. Shame or Self-doubt. Stage two corresponds to Freud's second stage in time (approximately the second year of life). Now the child has matured enough to move about and he is developing a "basic sense" of his autonomy around others. New cognitive abilities which have developed and other cognitive abilities which are developing are involved, but these are poorly defined and poorly described. Failure to resolve conflicts relating to autonomy result in serious problems with self-esteem (self concept), characterized by shame or doubt. One problem which may possibly first arise during this stage is low self-esteem. This is similar to one of the possible negative results of this period suggested by Freud. But again, Erikson believes that the problem will not remain unless somehow fostered.

Stage Three: Initiative vs. Guilt. This stage, again, corresponds in time with Freud's third stage (the phallic stage). Erikson acknowledges and Oedipal situation and conceeds that psychosexual problems may result from developments during this stage. But Erikson does not view the development of a healthy Oedipal complex

(or Electra complex) as the "central problem" of this stage. Rather, the child has realized his autonomy, his ability to do things for himself, in stage two and must now develop initiative by experimenting with his environment and refining and developing his skills. Children should not be made to feel guilty about being "curious". The new curiosity (and the new capacity to experience guilt) implies cognitive capacities and developing cognitive capacities not found in younger children. Again, as will be true in future stages as well, cognitive abilities are poorly defined and poorly described. Like Freud, Erikson would say that guilt, not shame, is the stage-specific problem at this point in development. This capacity to experience guilt is due to the organism's newly acquired cognitive skills and, though experiencing guilt is superego-type functioning, it is <u>largely</u> the result of such cognitive ego functioning and not the result of direct conflict between the environment and impatient id drives (libidinal drives). Moreover, the superego-type behaviors are well integrated with the functioning of the ego. It is unnecessary to speak of the superego behaviors as having an independent functioning.

<u>Stage Four</u>: <u>Industry vs. Inferiorty</u>. This stage corresponds in time with Freud's fourth stage, latency. But Erikson believes this stage has a social significance neglected by Freud. During this stage the child normally develops competence in his ability to perform the basic tasks of his society. A positive result of this "time of conflict" is "a sense" of competence and the negative possibility is a "feeling of inferiority". It is difficult to understand the differences between problems in self-esteem stemming from this stage and those stemming from stage three, as Erikson describes it. Much is left to one's own imagination in this regard.

Stage Five: Identity vs. Role Confusion. This is adolescence. The central "crisis" of this time or period of life is the (self-) identity crisis. Either the developing individual will find his proper role (in all regards) as a young adult in society and among his peers or he will suffer some degree or other of lasting role "diffusion".

Freud assumed that the individual had reached maturity by the end of adolescence. Erikson views life of any individual as having three more developmental stages. Two of these are substantial, in that progress in adaptation is clearly made. These are: Stage Six, young adulthood, the possible results of the life "crisis" of this stage characterized by intimacy or isolation (and loneliness), and Stage Seven, maturity, the results of which are characterized by generativity (helping younger people with interests similar to one's own) or stagnation (preoccupation with oneself and with trivial concerns). Stage Eight, old age, is not so much a developmental stage as a psychosocial state which comes with deterioration. This stage is characterized by a looking back on life and the key possibilities are integrity or despair.

C. An Ethological View of the Stages of Development

Below I will briefly outline an ethological view of qualitatively different stages in development. The five stages will correspond in time to Freud's and Erikson's first five stages. As noted before, the ethological perspective will be very general. I shall be concentrating on the bases for cognitive developments, something that is neglected by Freudians and neo-Freudians. The development of emotional responses will not be thoroughly described in the brief presentation below.

Stage One: Defining Objects in the World. In stage one the child coordinates the innate responses at birth. He does so by acting on objects in his world. Changes occur by way of the mechanisms outlined early in this chapter (Section I, Subsections A, B, and C).

At the same time his behaviors are being intercoordinated, the child is becoming aware of the effects of these behaviors on objects. Behavior is being integrated with the innate perceptual system so indeed objects become more and more distinct stimuli to the child. Also, he more and more realizes himself as a separate object in the world partly through association (contacts) with his caretakers.

The child continues to develop and finds further relationships between his behavior and the objects in the world. His perceptual (or perceptual-cognitive) system develops further so soon he can repeat behaviors which have produced an accidental effect. Late in stage one or early in stage two (approximately at 18 months) he will be able to intentionally cause an effect which he has caused before. Long-term memory is clearly already involved in adaptation.

Stage Two: Defining the 'Associated Class Characteristics' of Objects.

In stage two, indeed the child must develop "autonomy". More specifically, the child must develop "knowledge" of the predictability or consistent utility and reliability of his basic behavioral repoirtore (including primitive cognitions) for defining and affecting objects. Of importance are those characteristics of objects which are the correlates or determinants of how they affect or are affected by the subject or his caretakers. The aspects of one's behavior of which one is cognizant early in this stage are those behaviors which have been observed to have certain simple effects. At first

the child will purposely recreate effects he has observed but he will soon engage in systematic experimentation to find out how else effects can be created.

The integration of behaviors at this stage includes the first easily recognizable integration of behaviors with cognitions and perceptions. This clearly results in some behaviors becoming so well integrated or intercoordinated that they function (in effect) first as aspects of cognition or cognitive processes and then only overtly when thought to be effective. The child will become able to apply various behaviors he has previously exercised to achieve new ends. All this occurs by way of the mechanisms of behavior change outlined earlier in the chapter.

During this stage it is clear that innate responsiveness and the learning process are supplemented by new innate action pattern(s). Trial and error becomes much less relevant as a factor. The releasers of this stage are the most basic static and dynamic features of individual objects. This can be seen as the child acts on the objects in his world. By the end of the stage the basic associated class characteristics of objects will have been thoroughly "discovered". No abstraction, in any common adult usage (or sense) of the term, will be involved in this development. Basic characteristics are associated with an object, rather, perceptually abstracted from the observable characteristics of the object itself or from the activity of the object, in what are seen by the subject as typical circumstances. This innately-guided perception and definition of associated class characteristics will result in primitive mental sets and primitive but effective understandings regarding objects and their activity in a variety of circumstances. In other words, more covert behaviors, specifically cognitions and cognitive process-

es, are developed during this stage. This will provide a basis for the child's next stage of development.

Important during stage two is one's ability to consider the basic activities of people as reliable and thus predictable. People should be found to be very reliable in many ways when compared to the reliability and consistency of things. A child will not develop his "symbolic capacities" to their fullest potential if others do not respond to him and his distress and cooperate with him in his search for regularity in the characteristics and activity of things. Alternatively, reliable relations with others will promote the child's ability to make certain valid attributions concerning the nature of things, using cognitive mechanisms for assessment.

In general, at this early stage of development the knowledge of basic associated class characteristics will develop even in cases of serious maladaptation. Also, short of flagrant abuse, the value of many basic activities to caretakers and the way activities are connected with caretakers will be noted and compared with the importance of such things for oneself. It is this important comparison which can either trigger shame or result in the individual proceeding confidently. As mentioned earlier, shame is a relatively inflexible response pattern, in part acquired. It is probably derived in part from the interaction of distress with cognitive developments in the interpersonal sphere. When released by the required pattern of stimuli, it may act not only as a signal to others but may result in a search for more correspondence between one's own behaviors and the behavior of significant others.

By the end of stage two the most basic activities of objects and many meaningful properties (and attributions) of objects and of oneself, as an object to others, are roughly defined.

Stage Three: The First Step in Relating the Activities and Properties of Objects Widely Separated in Time and Space

By the end of stage two and beginning of stage three, objects are well enough defined that they may be further adaptively inter-related with one another. The new result in stage three is that adaptively meaningful superordinate groups or the superordinate class aspects of things, both as perceived and as recalled, come to be considered before the subject acts overtly. This does involve abstraction in a simple, familiar sense of the word, for both present objects and circumstances and thoroughly recalled similar objects and circumstances are involved in ongoing assessments of environmental circumstances. The knowledge of the activities and effects of objects, and of corresponding basic characteristics of the objects developed in stage two are the basis for the first superordinate classifications. At the same time the individual also classifies his own behaviors into role types by association (often recalled or "imagined") with the behaviors of others. Thus, early in stage three, fairly well defined superordinate classes of objects and events and classes of behaviors are beginning to be developed. And, as indicated, some classes of behaviors can be called role behaviors; included among such behaviors is the superordinate class: sex gender behaviors.

Behaviors now are not simply useful activities ("means-ends" behaviors) toward objects or toward very roughly associated ("egocentric") classes of objects. Such behaviors have already been developed and socially adapted. The numerous basic associated class characteristics of individual objects have already been defined by the subject. Further integration or adaptation now results in what

could be described as a refinement of one's cognitions and cognitive processes (cognitive mechanisms) with regard to the more important class characteristics of objects and the discovery of further adaptive inter-relationships between these. The child in this stage is apparently engaged in an abstraction process which could be termed a major classification process. This will involve a consistent inter-coordination of new groups of behaviors, overt and covert. Some overt and covert behaviors in stage three are best viewed as being used for classes of ends or goals; this is especially true for role behaviors.

Many important behaviors can no longer be viewed as directed towards individual objects or simple roughly associated groups of objects as was often true in stage two. Actual aspects of objects which define them as functionally related members of groups, and similar aspects of objects which are recalled (and separated in time and space) are the new class of stimuli which function as releasers in this stage. As was true in stage two, the emergence of such behaviors cannot be attributed to learning alone. Innate action patterns(s) are thought to be involved and the mechanisms of behavior change are again those which were cited earlier.

As noted, some groups of behaviors can best be described as role behaviors. This is true because some behaviors may become further classified in this stage according to their importance as distinctly human activities which are applied to the relevant classes of objects. My point is that some behaviors may be most easily classified, by the developing individual, in relation to others. Portions of one's behaviors which are under the direction of innate action patterns of this stage often seem most easily classified as 'human roles'. This greatly promotes (or "motivates", if

you like) imitation of others and thus the development of distinct role behaviors.

The individual in stage three may now see himself as failing in one area of functioning or another and is thus now capable of guilt (in contrast to shame). He may still experience shame, of course, and may display shame when he fails in behaviors relevant to many roles. But he is more immune to shame and this is clearly adaptive.

The individual in stage three is clearly capable of imagining behavior he has observed and imagining the effects of such behavior. Because of rewards, real and imagined, and conflicts, real and imagined, the child is directed to define and refine his role behavior. Many of the imagined conflicts would indeed occur if the child behaved in certain ways. The child must act appropriately with his father and mother and therefore role behaviors with respect to sex gender will be of great interest to the child.

Stage Four: The Abstract Classsification of Objects and the Discovery of Lawful Relationships

In stage four, interest in objects and role behaviors continues but superordinate classes are refined as new very specific classes of releasers become effective and as the activity of objects is further investigated. Again, the releasers are particular stage-typical abstract aspects of stimuli or of groups of observable stimuli, dealt with bother overtly and covertly. (As always, releasers are observable.) In stage four, key superordinate class aspects of objects are "discovered" which in time allow for new superordinate classes to form which correspond to the relations among factors involved in many important lawful activities of objects. As this occurs some understandings will preceed others, but by the end of this period we will find that all the most basic relationships be-

tween properties of objects which are related to the reliable (lawful) changes objects undergo will have been discovered. In short, a great deal of the lawfulness in the activity of objects and in the changes objects undergo will have been discovered.

In order to clarify the present development, let's review the basic developments thus far and then cite an example of the type of development presently under discussion. The adaptiveness of the developmental process as a whole may also be seen.: In stage one, the child discovers that objects are separate from himself and yet permanent things in the environment. In stage two, the child discovers the basic characteristics of objects with regard to the way he and others are affected by them and regarding the way he or others affect the objects. Basic knowledge of the way objects relate to one another in space is also developed. In the third stage of development, the child relates objects to one another in regard to the way they relate to future goals and future activities. Memory of entire events where he or others have had an effect on objects is much involved. In stage four, the stage presently under discussion, the activity and characteristicos of objects is "scrutinized" in a way that leads to the discovery of regularities in the more complex changes objects undergo. Examples of this are the discovery of the "conservation laws" described by Piaget. These laws require that one know that certain changes objects undergo involve a change in one aspect of the object which is accompanied by a reciprocal change in another equivalent aspect of the object.

In stage four, role behavior will also be refined. Children in this "latency" stage <u>turn toward peers</u> in their searach for more cooperation and to find more <u>consistency</u> in their cognitive assess-

ments of others. They are now able to at least roughly infer the views and beliefs of others once given some relevant information from them. At this stage, it can be argued that children are so cognitively advanced that they are affected by one another through mutual comparisons more than by their adult caretakers.

In this "latency period", a workable cognitive system for the organism which is to occupy the whole-world niche must develop. Although peers are important in this period of development, development must still occur within the protected boundaries provided by caretakers and with recommended objects ("objects of study"). The actual aspects of objects which may undergo change when objects affect one another are now the key "dynamic" characteristics at the center of the child's attention. Characteristics relevant to cause-effect processes are acutely important. Characteristics relevant to changes objects undergo when affected by the acting subject himself are necessary for developments of this stage to occur. Relevant object characteristics and such key events must be closely assessed to be further integrated and to eventually develop a counterpart in cognition and cognitive processes. By the end of this period of development, a child will not only be able to understand the most important lawful changes he is likely to observe, but he will be able to predict them. As with developments in previous stages, the change in orientation on the world which results in such a pervasive change in nearly all one's behaviors is thought to involve innate action patterning. Again, any behavior change is thought to occur according to the mechanisms previously defined.

Stage Five: Considering Behavior En Masse and Systems-Building

In adolescence the application of the well developed behaviors must be further developed and the affected behaviors further intercoordinated so that the application of well developed cognitive mechanisms can be refined. Cognitive processes must become still more adaptively intercoordinated. It is in adolescence that we see what the more passive modeling and social comparisons of the previous stages has rought. Through latency (stage four) the child bit-by-bit established stable skills and stable role behaviors. The skill developments are crucially important but are not so subject to adaptive problems as the behaviors related to social development. Social skills will be very important in adolescence for it is very important that one have the ability to cooperate and the ability to engage with others in many activities. Hopefully, these behaviors rest on a firm foundation, for the adolescent will find it necessary to accurately and adequately compare himself with others. More complex modeling and the corresponding developments in role behavior are very important in stage five. Although phenomenologically modeling is now experienced as much more a choice among options and is much less "obvious" than it was in stage four, it is still acutely necessary and in fact more necessary than ever before. The developing individual must now decide which individuals to model and in what circumstances.

Freudians and neo-Freudians have referred to what must occur in this stage as "establishing an identity". Indeed this is a good characterization of what occurs. Now, for the first time, all benaviors must function together with one another and for the individual, without direct guidance from others. This is possible if and when all behaviors become so adaptively and consistently intercoordinated

that they may be assessed, many at a time, in large groups. Indeed this is possible, for by stage five one's basic behavioral consistencies have been achieved and so have one's basic understandings of the world. The development of skills in operating in the world also involved major role behavior development and thus role behaviors too have achieved some consistency. In fact, behaviors have been so well developed that now groups composed of numerous behaviors, corresponding to the various societal roles, can be considered en masse. One major result of this new ability is that numerous mutual comparisons of role behaviors are made by adolescents. Eventually, by the end of adolescence, it will be possible to manipulate many such comparisons internally as aspects of cognition and cognitive processes. But in the beginning much interaction will be necessary. The mutual comparisons of role behaviors may often result in the discovery of disparities between one's role behavior and that of others. In some cases this may set up the stimulus pattern that will release emotional reactions.

In short, in adolescence a new superordinate view of one's role behavior develops. The process is far too efficient to believe that one develops an identity by trial and error application of skills and by learning; so once again a new class of releasers is thought to be involved in guiding the development of new skills. And again, all behavior change occurs by way of the mechanisms defined earlier in the chapter. The new releasers of this stage are <u>system-aspects of behaviors themselves when considered as operating in the world</u>. Covert representation of behavior is now much involved in establishing and locating the releasers. Yet, overt behavior always reflects the innate action pattern(s); innate action patterns are always initially overtly manifest. It now simply requires more abstraction

than has ever been the case before in order to assess the pattern and its adaptiveness.

The new capacity developed during this stage has been referred to as "formal operations" by Piaget. Some humans are better able to consider and compare their behaviors en masse and are more capable of these formal operations than others. They will also be the best able to adjust and apply their behaviors and their developed systems of behaviors. Such individuals will often be the best able to understand others and cooperate for they oftentimes can indeed "take the role of the other" (and, in fact, subsume it). They will often become our leaders.

This whole process of systems-building and mutual comparison takes time. Thus, adolescence is a rather long period of behavioral development. The systems-building behaviors of persons this age requires much thought, experimentation and rethinking. And as noted, included amidst all this is a self-evaluation (of one's role behaviors in comparison with others) which determines which roles one decides to select in society.

Not only is assessing overall cause-effect sequences of behaviors for their utility very complex, but any developmental biases or unnecessary inhibitions become acute at this stage. This is especially true because the full impact of such biases can now be assessed (at least in part) by the developing individual himself. Teenagers who do not have requisite social skills and thus cannot engage in the necessary social comparison processes or teens who do not consider themselves competent enough to decide what roles to play in society may indeed experience "role confusion". In addition, because of cognitive-affective maladaptations some individuals do not like themselves in comparison with others.

Chapter 1, Section III

Critique of Piagetian Cognitive-Developmental Theory

The reader has probably noticed some similarities between my view and that of Piaget. In fact, my perspective derives from his work and the work of modern ethologists. I abide by Piaget's basic assumption that individuals actively construct their understanding of the world by acting on the world. His view is that cognitions and cognitive processes develop as overt behaviors are (in effect) integrated with the existing perceptual or perceptual-cognitive system. Indeed, I believe I abide by this assumption more closely than Piaget himself or his followers. I also abide by Piaget's understanding of cognitive processes as qualitatively different from stage to stage, with each stage having as its foundation the culmination of useful developments of the previous stages. The ordering of the qualitatively different stages is invariant.

I believe that Piaget made an extraordinary number of good observations. And it is true that he views the subject as having an active part in behavior change and often cites behaviors either which establish or aid to establish the next level of cognitions and cognitive processes. Moreover, Piaget and his followers view this activity as absolutely necessary. But they do not explain all behavior change solely in terms of the subject applying his behaviors in response to the environment. This is a serious flaw for any theorist concerned with explaining all behavior change in terms of the environment and in terms of behaviors which can be observed or have been observed.

Piaget failed to show how the environment and the organism's behavior was directly involved in the process of behavior change in two ways: (1) In the later stages of development, he did not ex-

plain the mechanism behind accommodation strictly in terms of behavior. In later stages of development internal organizational processes were involved which, although highly adaptive, apparently had no overt manifestations. And (2) his interpretations sometimes involved only a description of what he observed on different occasions plus inferences about the type of changes that occurred. There were statements about how such changes were adaptive, but no mechanism was cited.

One should not consider Piaget's theory as having serious errors, but must understand it for what it is. For the most part (specifically, after the sensori-motor stage and the preconceptual period of the preoperational stage), it is largely a normative model of cognitive behaviors and how they develop and change qualitatively. Failure to show how the organism's behaviors in the world, in fact, always closely correlate with behavior change, may not be a major problem for those who wish to use the theory for some purposes. But one must realize that all the relevant releasers in the environment are not defined and those which are may be defined only in approximate terms.

One must understand that Piaget did not try to view behavior in terms of all relevant releasers. Such close study of the relationship between the organism and the environment did not seem necessary for his purposes. And indeed, in a way it wasn't, for he was concerned in a general way with the development of knowledge of the physical world. He could not have done a complete ethological study by himself. But, it is important that developmental psychologists, who study the science of behavior, understand the shortcomings in his theory for some of their purposes:

First, Piaget did not study any relationship between the environment the organism acts upon and other "non-cognitive" adaptive behaviors or between the environment and other adaptive capacities of the organism. Specifically, he did not specify the nature of emotions and their relationship to the environment AND he did not clearly indicate how memory of past stimuli and events may be involved in behavior changes. The latter rules out clearly specifying how past behaviors may be involved in the present assessment of the environment and thus how recall of past experiences may specifically be involved in behavior change. Secondly, there are consequences which follow from the fact that Piaget did not concentrate on specific classes of objects functioning as releasers. As noted before, after his stage one (the sensorimotor stage) and the first half of stage two (the preconceptual period) he often does not describe further behavior changes solely in terms of specific behaviors of the organism in the world. In contrast to assimilation and accommodation, some behavior change is viewed as if it were innately and progressively organized in large part without any accompanying interaction. Indeed he seems to view human functioning partly in terms of active adaptation through assimilation and accommodation AND partly in terms of other organizational processes that take place automatically. Although Piagetians always view interaction in the world as absolutely necessary, using his model we cannot understand all changes in cognition and cognitive processes as manifest in activity in the world. In his model some "organization", actually some accommodation, can take place innately and automatically simply because it is adaptive and much of this does not clearly involve interaction with the environment at all. Though some automatic behavioral organization may indeed take place, its empirical basis, up to now, had

not been indicated. I propose that any innate organization of behavior occurs due to the emergence of innate action patterns (perceptual biases).

My view of the mechanisms of behavior change always involves behavior (as I define it) in response to the environment. Behaviors may be overt or covert and most often are of both types. In my view, any innate patterning always (initally) has overt manifestations. All other changes in behavior take place by simple associative or disassociative learning. Although the learning process and innate action patterns involve unobservable physiological changes, all substantial change is mediated by interaction with the environment. There are always behaviors acting on objects in the environment, overtly or covertly, involved in all aspects of behavior change.

IV. Conclusion

It is my hope that the reader has found my perspective interesting. It may seem to be an impractical perspective for studying human behavior because so much close, long-term observation seems to be necessary. Indeed we may find that extensive long-term observations are necessary, but one must realize that all the work need not be done at once. Some general assessment of releasers and innate action patterns may be done and then hypotheses may be drawn up in terms of my model which can be tested in later studies. Also one need not study all types of behavior at once. A study of behaviors relevant to what are seen as a certain distinct type of objects in the world may be attempted. If one has a distorted view of what comprises a distinct type of releasers this fact will soon become apparent and later observational studies can be adjusted so as to have a closer fit with types of releasers.

In Chapter Two we will for the most part be looking at modern social learning theories. We will find out how they are probably a biased appraisal of aspects of human behavior. We shall see the limitations of these theories and hopefully the reader will see that these limitations are not present in the ethological model I have presented.

CHAPTER TWO: A Close Critique of the More Modern Theories and the Indication of Problems

A question occurs to me as it has to many others: with all the data collected on human subjects in the last 40 years, why is it that no one has come up with a new comprehensive theory of behavior and personality development? Alternatively, why is it that neo-Freudian theories remain the best comprehensive theories of personality development?

The typical answer to this question is as follows: We must be patient. Because the human is very complex we must wait until more is known, specifically until more data are collected.

Many concerned persons raise a seemingly related question: why haven't the existing theories been synthesized? The common answer: There are always developments and modificatons of existing theories, but they differ in their basic orientations (and "assumptions") so they may never be synthesized. Which theory is best awaits the analysis of more data.

I find that I'm not satisfied with either of these answers. I value the accumulation of scientific data regardless of the orientation of the researcher. Yet, I don't believe that more and more data of the type presently collected will lead us to a new comprehensive theory. I think the different theories do in fact differ substantially, but I do not think one or another will prevail as more data are collected. I believe there are a number of valid elements in all the prevalent personality theories, and I do not think it likely that anyone of the existing theories will subsume all of the valid perspectives. In my view, data of the type presently collected is locked into special research concerns which follows from needlessly restrictive perspectives on behavior. The different perspec-

tives each gain their adherents who are content to investigate only those behaviors which are the concern of those in their school. More data will not necessarily result in a widening of a school's concerns when the amount of data to be construed and the hypotheses which can be drawn from each perspective seem to be virtually endless.

At this point the reader must be impatient for me to say more about what I mean when I refer to "the type of data presently collected." I have been indicating that all data collected today is of a similar "type" and of a type that is consistently lacking in its merit. Indeed ths is almost an accurate characterization of my view. But I must clarify this viewpoint. I must emphasize that much of the data collected today is good scientific data; moreover, it is of utility and merit for <u>some purposes</u>. But it is gravely lacking if one's concern is to build a comprehensive scientific theory of behavior and its development. No modern theory, in my view, provides a truly scientific perspective on <u>all</u> behavior and a perspective which will allow us to better understand behavioral development. Let'take a look at what today's data is lacking which necessarily restricts it to less global concerns. I will attempt to indicate what data presently collected has in common and what its general limitations are.

Modern theories seem to differ substantially in their orientation, how can the data they generate be lacking in the same general way? First, to be accurate, I must say it is not that research is lacking because of problems with experimental design per se. Nor are investigations, based on the better theories, consistently lacking because of faulty assessment procedures. Rather, data collected today is all similar because only those portions of a subject's be-

havior which can be viewed during short-term observations or during experiments of short duration AND which can undergo direct and apparently independent changes during such time periods are considered. Because of time restrictions on what theorists see as meaningful periods of observation, modern theories also lack imagination with regard to what may constitute a mechanism of behavior change. Only mechanisms which are detected during short-term study and which have their effect during this period are considered as significant factors in behavior change. This further reinforces the study of behaviors which are influenced by such mechanisms the theorists define and which undergo what are seen as significant changes during the time segments they observe. A vicious cycle has been established. Moreover, despite any appearances to the contrary, no theory incorporates all possible scientifically acceptable mechanisms of behavior change; more to the point, none posits mechanisms of behavior change which could give us a good basis upon which to build a comprehensive theory of behavior and development.

I realize that some readers may see no problem with the approach described. Thus, I shall take another look at the same matter and in so doing indicate how, regardless of one's theoretical orientation, a basic error in reasoning is involved in the procedure just described. After once again attempting to indicate the problem in general terms, we will examine the problem as it manifests itself in each of the major types of modern theory, namely: social learning theories, cognitive-developmental theories and neo-Freudian theories.

Present day researchers of all three schools of thought operate on limited domains, or subsets, of behavior. To be accurate, I must point out that they operate on limited domains of behavior for two

reasons: (1) Experiments or observations are of very short duration and the behaviors studied are those which the researcher can construe as meaningful in this time frame, and (2) researchers consistently analyze only some of the types of behaviors which they observe. The different schools differ in the basic types of behavior they care to examine during their studies. In part as a result of this and in part due to small but significant differences in the time frame of their studies they differ in their view of what constitutes the primary mechanisms of behavior change. But more importantly, no school considers all possible mechanisms; nor can any of the schools come to consider all possible mechanisms for two basic reasons. As I've said, the mechanisms of behavior change which theorists define depend on the behaviors they choose to study: this limits the mechanisms they are willing to consider. But there is something else which all modern theories have in common which makes it impossible to discover certain new mechanisms: This is simply the fact that all modern theorists, in search of what they believe is a scientifically acceptable theory, assume (in effect) that they not only have observed all relevant types of behaviors, but that they either have observed or can observe all mechanisms of behavior change in the time frame in which they operate. Either explicitly or implicitly, modern theorists put restraints on the amount of time they are willing to believe it can take to observe a mechanism of behavior change as a distinct factor. They believe, in effect, that they have observed all the basics of behavior and development during their short term observations or experiments. This is simply presumptuous.

The problem is that a class of potentially important behavior change mechanisms is not considered. As I said in Chapter One, in-

nate action patterns may emerge periodically. These would not be seen as distinct independent factors affecting behavior unless the organism had been the subject of extensive longitudinal observation. This is because many otherwise independently functioning behaviors are influenced all at once and then for an extended period of time by such a factor. I submit that innate action patterns are in fact distinct, independent factors and this would be clear if the various radical shifts in behavior were observed during extensive longitudinal observation and if the differences in stage-typical behaviors from one stage to another were fully appreciated. If indeed this is so, innate action patterns may well be legitimate objects of scientific enquiry. Moreover, a related problem is that some on-going behaviors which may seem to be distinct, independent factors in behavior change, as they are presently viewed, are probably not actually operating independently. Again the root of the entire problem lies with a bias concerning the length of time during which behavior can be properly observed and assessed. This observational bias leads to a bias in understanding the mechanisms of behavior changes with some potential mechanisms excluded from consideration. This reinforces the study of only certain types of behavior and reinforces the myth that the behaviors studied are always acting as independent factors. Both the conclusions drawn concerning such behaviors and their status as good scientific research data are often in error.

Let's look briefly at each of the theoretical schools:

A. Social Learning Theories

Social learning theorists study the mechanisms of learning in controllable situations. Artificial time limits are part of the controllable situations which are the domain of their study. They ex-

plicitly extend their learning principles to explain any behavior changes, which is to say that the learning mechanisms they observe operating during their experiments are presumed to be the only significant mechanisms of behavior change. In their view, all behaviors which the organism exhibits are the way they are largely as the end result of the operation of these mechanisms, time and time again, on the innate drives and innate movement patterns ("reflexes") the organism was born with. No innate behavior patterns reoccur in any significant way; no innate behavior patterns remain relatively unaffected and unaltered by learning mechanisms. Nor do any new innate behavior patterns appear after birth. This view is unacceptable to an ethologist, but is in fact essentially the view of all behaviorists, past and present. I will demonstrate this as we examine modern social learning theories in more detail later in the chapter.

B. Cognitive-developmental Theories

Cognitive psychologists study cognitive process in problem solving situations which are defined in only a very general or qualitative way. Behavior in such situations is prompted, observed and described. Cognition and cognitive processes are inferred. Cognitive-developmental psychologists similarly study the cognitions and cognitive processes of children of various ages and of adults and compare results. Some also note transition behaviors. These transition behaviors seemingly must be exercised and somehow refined, for they are the basis for changes in cognitive processes as the child progresses from one stage of functioning to the next. Piaget, the most famous cognitive developmental psychologist and theorist, was very careful to look for transition behavior in all his observations and experiments. Let me again describe and characterize his work.

Piaget was concerned with the development of abilities which allow the organism to assess many aspects of his environment. Because his concerns were of such a general nature he gives a general assessment of his observations and results. For this reason, his description of stage-common cognitions and cognitive processes may very well be qualitatively correct. His results were no doubt sufficient for his purpose, which was to come to some understanding of how human knowledge of (ability to assess) the world develops. Moreover, since he conducted many studies on children of all ages and on his own children at different ages, the type of changes that must occur in cognitive processes were indicated. But this is not to say that the actual mechanisms of behavior change were well defined. Although he observed behaviors which appeared to be transitional and this is suggestive, we are most probably quite far from understanding the actual mechanisms of behavior change. Piaget had no abiding concern with the actual mechanisms of behavior change because he didn't attempt to delineate the features of the environment which triggered all relevant behaviors and which thus may have had an active part in behavior change. For his already ambitious and general purposes this task would have been impractical; in any case such detailed concerns were unnecessary for these important early studies.

Yet it is very important to realize that because Piaget did not concern himself with more than a general (qualitative) account of behavior and because in my view, he does not closely study or define the actual mechanisms of behavior change, the implications of his work are limited. For example, because environmental releasers were not clearly investigated, Piaget did not observer actual interactions between cognitive processes and emotional reactions. Also, it is not clear how accommodation and assimilation relate to learning

processes. Unfortunately, there is good evidence that Piaget did not understand the limitations of his results, nor do his modern followers:

I believe it would be fair to say that Piagetians are confident that they see hints of all significant (scientifically investigable) mechanisms of cognitive development during their numerous short periods of observation and interaction with children. Some interaction, of the type they have observed with transition behaviors, is seen as essential for any significant change in cognitive behaviors. But, as I noted in Chapter One, Piagetians believe that many aspects of cognitive development are innate and automatic, or as they would say, the product of innate organizational tendencies. Such changes are not viewed as involving step by step interactions with the environment. Certainly the way to assess many potential interactions is not specified as it was in the ethological perspective in Chapter One.

I would point out that, as was true of behaviorists' exclusive belief in learning as the sole mechanism of behavior change, this belief in transitional behaviors coupled with innate organizational tendencies is clearly presumptuous. This could clearly be the result of a belief that all distinct independent mechanisms which may be investigated behaviorally would "show themselves" during the numerous short-term periods of observation. Actually, in contrast to what in effect is the Piagetian view, there is no reason as of yet, not to believe that all behavior change involves interaction with the environment. When the nature of environmental determinants (releasers) at each stage have been specified by extensive longitudinal research there may be no need to posit innate and automatic organizational processes outside of perceptual biases. It is important,

nonetheless, to give credit where credit is due. Piaget discovered very real commonalities in the questions asked and in the problems solved by children of the same general age and the differences between different age groups. Important differences in how the subject develops at different stages were thus noted. In fact, the differences in the problems solved by children of different stages, as explored by Piaget, are presently the best indications human ethologists have of differences in releasers which are effective during the various stages of development.

Other researchers, who are not Piagetians, also indirectly assess and infer cognitive processes of adults and children. Like Piaget, they provide us with a general assessment of cognitive processes. Some of these researchers give an interpretation of mechanisms of cognitive change based on observations of presumably similar learning. While other social cognitive researchers make no attempt to interpret mechanisms of change inferred from various tasks. All these researchers draw hypotheses about the nature of cognitive processing. The models developed and used are simple phenomenologically-based models. These models are models of human functioning which are essentially normative models of adult functioning. Even when modified to describe the behavior of children, they do so very inaccurately. This is because they are from the start truncated models of human functioning, emphasizing only later developed behaviors and actually neglecting more simple yet basic behaviors which originate early in development. Factors which will affect cognition or cognitive processes are hypothesized in accordance with such models. All significant (fairly well defined) factors which are investigated operate during controlled experimental sessions.

In the work all cognitive-developmental theorists we see time-

bias in what is thought to constitute an appropriate period of observation. Correspondingly, there is time bias in the interpretations given by these theorists. Those social cognitive theorists which are willing to posit mechanisms of cognitive behavior change posit time-biased mechanisms which are for the most part similar to the time-biased interpretations given by modern social learning theorists. Piaget's model involves a more obscurred time-biased interpretation of behavior change mechanisms, but once again it is fair to say that the general assessment of behaviors involved in cognitive-behavior change always has much to do with the behaviors observed during single observational sessions. In all cases this does not invalidate the general descriptions we are given by these researchers but simply limits the usefulness of the models. None can be comprehensive theories of behavior and its development.

C. Neo-Freudian Theories

Neo-Freudians still content themselves to learn the sensitizing myths and allegories which their developmental theories represent. Neo-Freudian theories help psychiatrists to construct a rich and detailed description of clinical phenomenology but there is no reason to believe that the neo-Freudian developmental theories are much more than a set of meaningful myths, having some of the merits of good allegories. Neo-Freudian theorists embrace only the data which their theory can embrace and which they themselves seek, given whatever line of work they are in. I think it would be fair to say that the developmental processes (mechanisms) described in neo-Freudian theories are modeled to a significant extent on processes and change observed or inferred during clinical sessions. Interpretations of developmental changes are also based on a physical model, which has

no necessary relevance to the type of processes they are used to illuminate, and on misapplied biological principles.

I believe a time-biased interpretation of mechanisms of behavior change is generated using neo-Freudian theories, although this is obscurred by the modeling of development on a type of physical-biological system. We know this is so simply because, as with the other theoretical schools, no well-defined <u>empirical basis</u> for mechanisms of change which operate over long periods of time has been considered. Such an empirical basis for orderly long term behavior change was posited by the ethological perspective in Chapter One -- specifically, the well-defined concept of innate action patterns.

Although neo-Freudian theories are seen by some as embracing all types of behaviors, they are not able to incorporate and thus clarify the scientific data which is gathered by those working from other theoretical perspectives. A good comprehensive theory could do this.

In short, though the different schools of thought make much ado about how they differ in orientations and supposedly in other basic "assumptions", they are all similar in that short-term mechanisms of change, compounded again and again, are supposed to account for all important behavior changes. Mechanisms which manifest themselves only periodically and require a long period of time to have their full effect are excluded from consideration. The samples or portions of behavior which they admit as data reinforce this view. None would consider the possibility that unobtrusive, long-term observation could provide unbiased information. Indeed, I hold the opposite view. I believe that unobtrusive, long-term observation would provide vital basic data, though using such a methodology involves unconventional views concerning an observer's competence and

accuracy. I believe that with the proper set of assumptions, the proper perspective, and well defined guidelines, an observer can make reliable valid judgements.

At this point I will examine the most modern version of neo-Hullian theory and then we will look at newer advances in social learning theory. We will find that social learning theorists are becoming more willing to consider covert behaviors which can only be assessed indirectly, but there have been no changes in the approaches to study which allow one to assess potential behavior change mechanisms not seen during experiments of short duration. It is good that social learning theorists are now admitting more and more of the phenomenology that goes on "in the organism" during the period of study, but we shall see that no valid interpretation of many of these behaviors will be forthcoming until observational biases are cast aside.

I shall not examine cognitive-developmental theories or neo-Freudian views any further. Many of the limitations of these perspectives are appreciated and even overemphasized. It is with social learning theories that psychologist's hopes spring eternal.

D. A Look at the Developments in Social Learning Theory

1. A Closer Look at Neo-Hullian Theory

I will begin by offering a critique of neo-Hullian theory in regard to the assertions made earlier in this chapter. This was the first social learning theory which attempted to be a comprehensive theory of behavior and its development. Dollard and Miller developed many of the neo-Hullians concepts in the attempt to make the theory comprehensive. After examining the neo-Hullian approach to understanding behavior, I will briefly characterize Skinner's radical behaviorism and then look at Bandura's recent contributions to

social learning theory. My object is to examine the scientific merit of these approaches.

Neo-Hullians (and modern social learning theorists) view habits as the stable aspects of personality. They emphasize the process of habit formation. In my view the only fairly well defined mechanisms they cite as involved in the process are two types of learning. Today we would call these two types of learning instrumental (or operant) conditioning and classical conditioning.

In the neo-Hullian formulation both of these types of learning are associated with the reduction of "generalized drive states." Drive states are initially the result of innate internal drives (primary drives) such as hunger and thirst. Such primary drive states trigger a relevant set of behaviors some of which are successful in acting to obtain primary reinforcers in the environment. The exact features of the environment which act as primary reinforcers were never clearly specified. Later, drive states are also inferred from responses to new cues in the environment. A "secondary drive state" is said to exist when some primary drive-associated behaviors (which may have been previously shaped by operant conditioning) can be triggered by new cues; specifically, a secondary drive state exists when new cues alone are effective in elliciting behaviors. Such newly effective cues are called secondary reinforcers. These secondary reinforcers are cues or stimuli associated with primary reinforcers or which once were associated with primary reinforcers. The organism was supposedly classically conditioned to many of these cues, though in some ill-defined way "stimulus generalization" could also occur and result in new cues for behavior or new reinforcers of behavior.

In the neo-Hullina view infants have an innate repoirtore of responses to primary drive states. These drive states are non-speci-

fic or "generalized" in that the child exhibits a number of behaviors before finding which of his responses best reduce the drive state. As noted, certain environmental stimuli are posited as innate or primary reinforcers of behavior. Apparently these stimuli are viewed as so simple that they need not be specified. They are the objects of consummatory behaviors; obtaining these objects results in a reduction of the drive state and less behavior -- an inherently rewarding state of affairs. Which responses are successful in the process of obtaining a primary reinforcer are effective in reducing the drive state and these responses are strengthened (likely to reoccur when the drive state reoccurs). Caretakers may mediate in the process, in part determining which responses are successful. According to neo-Hullians this is how one type of learning occurs (known today as instrumental or operant conditioning). This is, in fact, the way habits are formed; habits are simply successful drive-reducing behaviors. The other sort of learning, as we shall see in the next paragraph, just determines where and when habit behaviors are applied, assuming the behaviors in question are sufficiently "strong" to be applied at all. Some behaviors and some old habits which do not successfully participate or are not allowed to participate in reducing drive states will undergo extinction.

The other sort of learning (classical conditioning) occurs when a stimulus or group of stimuli are repeatedly associated with a primary reinforcer. The associated stimuli may come to trigger drive behaviors. As noted such new cues are called secondary reinforcers if they alone can illicit drive behaviors. There is thought to be a drive state corresponding to these behaviors. Such a drive state is referred to as a secondary drive state. It is important to note that secondary drive states, like primary drive states, are of a

"generalized", non-specific nature, in that the organism will exercise a number of behaviors or response habits in the presense of the secondary reinforcer. Those innate behaviors or those behaviors shaped by previous learning which best reduce the secondary drive state will be strengthened. You can see that the classical conditioning of drive behaviors to new cues guides the application of habits and thus influences the habit-behavior pattern displayed.

It will be useful to look more closely at how the process of developing new behaviors is guided according to the neo-Hullian view. First, we should note what behaviors are changed or shaped. We must know if newly emerging innate action patterns might be involved in guiding behavioral development. In neo-Hullian theory, no distinct new behavior patterns are thought to emerge during development. For the most part, an inborn innate repertoire of behaviors is thought to be shaped and their application refined by the two types of learning processes just described. Neo-Hullians believe that most significant learning takes place in a social context with caretakers or others mediating in the learning processes. Yet, although most changes are thought to take place due to learning, we will soon see that other, possibly unrelated mechanisms may be involved. We will see that stimulus and response generalization may take place, where established responses to particular stimuli can be ellicited by "similar" stimuli. Also, somehow some of the organisms own overt responses or hypothetical covert responses can become cues for other behaviors.

Since learning processes are the primary mechanisms of behavior change we must ask what the neo-Hullians considered important in guiding behavior development via these processes: (1) Cues of a simple perceptual nature (poorly defined by the neo-Hullians) are impor-

tant. Certain such cues can be perceived and can be reliably associated with the objects that are perceived to be the objects of drive behaviors (primary reinforcers). Those associated cues which aided in drive reduction or allowed for drive reduction would become effective in elliciting behaviors. In some cases (unspecified) these cues would become secondary reinforcers. Again, when the behavioral responsiveness is altered in response to secondary reinforcers, these stimuli are thought to trigger drive states and drive behaviors. Thereafter certain cues could be reliably associated with <u>these</u> stimuli and form the basis for further redirection and changes in secondary drive behaviors.

It was always assumed that "learned" cues would be observable stimuli of a rather simple nature. Such simple stimuli could be defined during periods of short term observation. When stimulus generalization (another mechanism to be discussed shortly) participates in the process any stimuli considered to be members of the same "class" of stimuli (poorly defined) as those previously known to be effective might function as cues. In the neo-Hullian view it is clear that it is only these sorts of stimuli which guide the application of the organism's existing responses through operant conditioning. At times, responses or response patterns are <u>classically</u> conditioned to new stimuli of the same "simple, easily defined" sort.

(2) In the neo-Hullian formulation, cognitive behaviors could be involved as an influence on one's behavior. But these behaviors exist only as the result of past learning of the type described above.

One should be able to clearly see problems with the approach to understanding behavior described above: (1) The possibility of new innate action patterns emerging during development is ruled out.

This is not a well-founded assumption, but a presumption. (2) Cues are defined by the researcher and only "simple" types of cues are regarded as effective. This, too, is not a well founded assumption, but a presumption. (3) Cognitive processes are inferred on the basis of cues "which must be functioning" and these cues again are of a presumed nature. This third problem follows from Problem 2 and is the result of the theory providing no method to hypothesize and assess what is likely the real character of such covert processes. Cognitive processes were often viewed as simply "imagining relevant cues" though occasionally "imagining different possible responses and their consequences" was also possible.

There are other problems. On the basis of learning and learning principles (discovered in the laboratory) alone, complex behavior would be impossible to explain. Take, for example, the complex social judgment behavior. It is impossible to develop this type of behavior solely on the basis of the operant and classical conditioning of the inborn behavioral repertoire. Nonetheless, these are the only fairly well defined mechanisms and probably for this reason these mechanisms, as much as plausible, are hypothesized as the sole mechanisms of behavior change.

In fact, neo-Hullians are able to explain complex behavior only by citing two other mechanisms: (1) stimulus and response generalization and (2) the development of cue-producing responses. These mechanisms can be observed during short-term lab experiments. They are used to explain simple learned and unlearned behaviors in the laboratory. But when "significant" behavior change is hypothesized to have occurred by way of these mechanisms, learning is always presumed to be involved. Yet, such processes of significant behavior

change are rarely observed; it is most often thought and not practical to study the long-term shaping and conditioning of human behaviors. In short, these mechanisms of behavior change are cited and thought to operate in the way just noted when necessary for a plausible "explanation" of past behavioral development. And at the same time, these same mechanisms are used to explain certain unlearned responses in the behavior presently under observation.

While these mechanisms, which we shall now examine more closely, seem to accurately describe certain phenomenon, we shall find that there is no basis for hypothesizing when such phenomenon will take place instead of the more simple learning mechanisms.

Stimulus-Response Generalization. Recall that stimulus and response generalization (s-r generalization) involves the generalization of an organismic responsiveness from primary and/or secondary reinforcers to other "similar" stimuli. The stimuli are posited (presumed) to be perceptually or congitively similar as need be to explain what's going on in a given observational period or to hypothesize what must have happened in the past. By way of this mechanism, the organism may apply his behaviors to new stimuli or generalize any learned inhibitions.[15] There are two problems with the way the mechanism of s-r generalization is posited: First, there is no basis in neo-Hullian theory for hypothesizing or assessing perceptual or cognitive "similarity". Thus, there is no way to predict when s-r generalization can occur. This, in contrast, would not be a problem for those who adopt the ethological perspective presented

[15] Although inhibitions are often learned operantly and then conditioned to new stimuli, stimulus generalization is sometimes said to be involved in "learned" inhibition. This is true with regard to many major discriminations the organism must make.

in Chapter One. Secondly, it is not clear that significant behavior change involving this mechanism entails perceptual-cognitive similarity mediated by learning as neo-Hullians often propose. It is certainly conceivable to me that things may come to be viewed as perceptually similar (and, with development, cognitively similar) because of the emergence of a new innate action pattern. This is precisely the way innate action patterns would likely have their effect. The fact that social learning theorists often fail to specify in their hypotheses the way learning is involved in the important response generalizations is suggestive.

Cue-producing Responses. A cue producing response exists when one response serves as a cue for other behaviors. Included most notably among the responses in this category are the "language cues" in covert cognitive processing. The concept of the development of cue-producing responses has problems very similar to those cited for s-r generalization. But let's look at another problem: The concept of cue-producing responses is especially troublesome when covert behaviors are involved. It is my view that the nature of covert behavior cannot be hypothesized and cannot be accurately assessed on the basis of neo-Hullian theory. I am unwilling to believe that covert behaviors can be accurately inferred from overt behaviors observed during the many diverse and scattered periods of experimentation. Even the general conditions under which cognitive responses can be involved and mediate overt behaviors are not specified in the theory. This entire problem would be avoided if researchers adopted the ethological perspective and approach.

Let's summarize what we have discussed thus far and the implications. The reader is aware that neo-Hullians cite the last two mech-

anisms of behavior change discussed in order to account for complex behavior and in hypothesizing the way certain important behavioral developments took place in the organism's past. But it should be clear that it is not appropriate to cite mechanisms as need be when they have a poor basis in empirical observation. The fact is that the legitimacy of the present concepts rests on the fact that such mechanisms appear to be at work during periods of experimentation and because some significant response generalization and some significant cue-producing responses appear to be learned. The possibility that these phenomenon may often be the result of stage-typical (and species-typical) capacities as expressed in innate action patterns is not considered. I submit that this class of processes which theorists have neglected to consider may be involved in both s-r generalization and in the development of cue producing responses. A single innate action pattern, as described in Chapter One, may result in numerous response generalizations over time and in the development of many cue-producing responses. It is quite possible that <u>most often</u> innate action patterns are involved in significant occurrences of these phenomenon. It may be that few, if any, lasting and important s-r generalizations take place and few, if any, lasting cue-producing responses develop as the result of simple learning processes <u>operating alone</u>.

We have, in fact, two ill-defined behavior change mechanisms. Both s-r generalizations and cue-producing responses occur or develop in an unspecified manner -- in "trivial" cases these processes are thought to occur without learning; but when "important" developments occur, learning is thought to be involved. Nonetheless, these mechanisms are conceptualized and thought to occur and are thought to be a view of behavior in accord with the rest of the model. Ironically, if one considers the possibility of innate action pat-

terns, these mechanisms may have little to do with the rest of the neo-Hullian model in many important instances. Again, they may not be simple mechanisms which are largely the result of learning. Rather, there may be much more to the simple perceptual generalizations and the development of cue-producing responses observed than has been thought to be the case. Innate action patterns may periodically be involved in determining what stimuli are seen as similar, as they are with other highly evolved organisms.

In nearing the conclusion of the discussion of s-r generalization and cue-producing responses, I am forced to ask how it is that neo-Hullian (and modern learning theorists) view these mechanisms as sufficiently well understood to allow them to interpret behavior at all. Since they do interpret behavior in terms of these concepts I've outlined, I can only surmise that they believe that the "essential nature" of s-r generalization and the development of cue-producing responses remains constant. Implicitly it is assumed that the nature of these processes, like the nature of learning, will always be judged as similar in key respects by all researchers, regardless of the ages of their subjects or their special research domains. This is in accord with their belief that there are no innate mechanisms not present at birth that exert influences on behavioral development. But, this implicit assumption is unjustified.

All this said, how <u>useful</u> is the neo-Hullian formalization? Consider the distinct research domain of cognition and cognitive processes, can the neo-Hullian approach aid in the interpretation of the major findings in this area? I would say no. Given what we have learned about cognitive development and cognitive functioning, largely through the ingenious indirect assessment methods and work of Piaget, it is not hard to see that the <u>significant changes</u> result-

ing in major cognitive abilities would have to be interpreted as involving s-r generalizations and the development of cue-producing responses. This makes a closer assessment of these behaviors of great importance. Unfortunately, on the basis of neo-Hullian theory, these mechanisms cannot be unequivocally assessed, when involved in covert behavior change. For any such covert behavior change hypothesized, an alternative hypothesis can be offered, if not by a differing behaviorist, by the ethologist. If processes involved in cognitive behavior changes are not similar to the processes involved in overt behavior changes which happen to be studied, those taking a neo-Hullian approach to interpretation are in trouble. Moreover, it seems to me that cognitive development hinges on changes in the essential nature of behavior change mechanisms, something not anticipated by neo-Hullian theorists. What about interpretation in other research domains? If cognitive behavior is, or may be, involved in any overt behavior change we are in poor shape if we take the neo-Hullian approach to understanding behavior.

In conclusion, we have looked at s-r generalization and the development of cue-producing responses and have no evidence that these general sorts of phenomena are well understood by neo-Hullians. In fact, I assert that they have no basis upon which they can predict when any lasting and significant behavior changes involving these processes will occur. The reader thus should not be surprised if I submit that no one should be content to make any interpretation of behavior based on the very uncertain hypotheses that some s-r generalization(s) took place in the organism's past. Similarly, no interpretation should be based on the hypothetical development of cue-producing resonse(s) in the organism's past. Certainly these are not ubiquitous phenomenon and one cannot presume they will take

place whenever circumstances seem to fit the paradigm. The fact is there is an insufficient basis upon which to assess these phenomena. This can be understood most simply as due to an inability to assess the nature of covert behaviors (perceptual and cognitive behaviors) and their involvements in overt behavior change. Correspondingly there is no way to arrive at general principles concerning when these processes will occur. This is a major flaw in neo-Hullian theory. It is also a major flaw in modern social learning theories. These problems would be non-existent if researchers adopted an ethological approach.

We must consider one other major criticism of the neo-Hullian interpretation of behavior. Like many of the criticisms I've lodged, this will be relevant to modern social learning theories as well. I argue, in accord with the model for understanding behavior presented in Chapter One, that even the two types of learning are not well defined concepts. The simple learning processes are probably much more common phenomenon than stimulus-response generalization which is mediated simply by learning or the learning-mediated development of cue-producing responses.[16] As compared with hypothesizing these two latter phenomena, one will be much more likely correct when hypothesizing that some roughly-defined set of responses in the past were associated in some way with a seemingly potent reward. Similarly one might well be correct in hypothesizing that certain types of behaviors were ones effectively associated for obtaining some goal. But learning, while possible in many circumstances, cannot be assumed to occur whenever imaginary conditions fit the paradigm. It is not a totally ubiquitous phenomenon. Because this is so it is unfortunate that the precise nature of learning process-

[16] Reasons why this is so may be hypothesized based on the ethological perspective presented in Chapter One.

es cannot be hypothesized or assessed on the basis of neo-Hullian (or present-day) learning theory. Many signficant changes in overt behaviors may be the result of changes in covert behaviors, which result from covert learning or the emergence of an innate action pattern plus learning processes. Neo-Hullians most often have no standards for accurately hypothesizing covert behavior -- past developments which are hypothesized cannot be unequivocally verified. The ethological approach has no such problems. I believe the nature and significance of much learning and the basis for its long-term resistance to extinction cannot be hypothesized using neo-Hullian (or present-day) "learning principles". Factors such as reinforcement schedules which have bearing on short term behavior change may have little to do with significant behavior changes during development, especially groups of apparently related changes which may take place gradually over long periods of time. It seems to me that by and large most learning or conditioning can be more accurately viewed as guided by factors inherent to the organism (innate action patterns) rather than by environmental factors perceived as distinct and significant by adult researchers. I believe that no learning theorist can reliably predict what significant learning will occur with any more precision than the "man on the street". The theories simply have not been helpful.

It is my view that past and present investigations have not provided any certain data which pertain to the major characteristics of the developmental process. This is because of an inability to assess covert behavior and much of the learning that goes on covertly and because a whole class of potentially important factors have been neglected from consideration. Learning, like s-r generalization and as described in Chapter One, may not be an independent mech-

anism in the developmental process. In my view emerging innate action patterns direct much of the significant learning that goes on. Neo-Hullian behavior assessment (and behavior assessment by modern social learning theorists) is so crude that the fact that certain learning occurs in the laboratory setting can often times be assumed to have little bearing on the learning that would have taken place in a similar but more complex natural environment. A theory used for research should in time generate standards concerning which behaviors are worthy of study. Certainly one should not have to hypothesize that learning processes will yield equally likely behavioral changes or equally persistent behavior changes on sets of behaviors which are judged as similar simply on the basis of some common overt features. Yet this is precisely the common-sense approach that must still most often be used by researchers. There is quite apparently an insufficient basis in neo-Hullian theory (and in modern s-l theories) to hypothesize or assess which aspects of behaviors are important to study.

Viewed most simply, the core of the problem is the fact that the nature of any learning process under observation cannot be fully assessed. Using the neo-Hullian approach, behavior cannot be judged in context: Many covert elements of the potentially relevant and potentially active behavioral repertoire cannot be assessed. Although cognitive and/or perceptual factors may not be as readily subject to change, their nature and development must be understood to understand overt behavior change. Such stable behaviors are not likely incidental. Extensive longitudinal observation such as that described in Chapter One would allow an empirically based assessment of covert behaviors and also allow one to determine which covert behavior is most likely involved in ongoing behavior change.

In short, an efficient and practical solution to the problems of learning theories simply involves the realization that a close monitoring or appropriate assessment of all potentially relevant behaviors (overt and covert) from birth to the stage of life of concern is important for any accurate assessment of present behavior. From such a "background study" a researcher will obtain knowledge of the complete relevant behavioral repertoire. He will know what behaviors developed or must have developed, how they developed, how they were influenced (modified) during later development and how and under what conditions (if any) they may presently be influenced. Also a researcher will have a very good notion as to which classes of stimuli are presently salient. Using the ethological approach researchers in time will be able to predict what circumstances will result in significant learning in the present. Recall that the ethological study which I proposed in Chapter One must be a longitudinal study of an unobtrusive nature. The well defined behavior assessment procedures and the results one could expect were outlined in Chapter One.

In closing my discussion of neo-Hullian theory I must point out that indeed, as claimed earlier in the chapter, it is possible to indicate that short-term mechanisms, viewed during short periods of experimentation and observation, are considered the primary mechanism of behavior change in this learning theory. The most important result of this interpretive procedure is that behavior and behavior change mechanisms remain poorly defined; this is because the theory does not allow us to assess the perceptual-cognitive context in which behavior takes place. It is no wonder that neo-Hullian theory cannot aid us in predicting behavior. The ethological approach to studying human behavior offers a scientifically acceptable way to assess and evaluate all effective behaviors. I believe we must have

faith in just such an approach[17] if there is any chance of a science of behavior, if there is any chance of interpreting behavior change in terms of behavior previously observed. It is my view that certain behaviors are closely correlated with the physiological bases of behavior change and at some time or other have manifestations which are observable. We will not have to content ourselves with the roughly defined general "principles" such as those which are common today. What is needed is the legitimate developmental approach such as that dictated by the ethological perspective. A detailed longitudinal study following the sequence of develoments is necessary.

The instrument used will be the human observer, his assessments empirically based and standardized by assumptions based on necessarily applicable biological principles applied to the broad base of all potentially relevant types of behaviors presently known to exist. (See Chapter One and Chapter Five)

2. Skinner's Radical Behaviorism

Skinner believed neo-Hullians were paying too much attention to covert behaviors which were supposed to be taking place. He reasoned that since actions, rather than internal events, are the developmental outcomes psychologists are to explain, only overt behavior need be studied. This is a very strange view from my perspective. He does not consider the possibility that it may be impossible to evaluate behavior change without appropriately inferring perceptions, cognitions, and cognitive processes. Apparently he does not perceive these behaviors as vitally related to overt behavior. Surely Skinner lost sight of the forest for the trees.

[17] Or if not faith: examine the better base of assumptions upon which such an approach is based -- Chapters 1 & 5.

On the positive side, Skinner suggested that the majority of human behavior is not based in reactions to internal drives and their primary reinforcers in the environment. Other external stimuli, not connected with internal drive states, may ellicit behavior. Given the small number of accepted positive (proactive; non-reactive) internal drive states (e.g. hunger, thirst, sexual behavior associated with hormonal changes), and given our present knowledge of the various different types of releasers which may trigger innate behaviors (from work of modern ethologists), this assumption is very well justified.

Also, Skinner was correct when he noted that covert behavior could not be accurately assessed by neo-Hullians. As I've noted, covert behaviors cannot be accurately inferred, indirectly assessed or described by learning theorists even immediately after their supposed occurrence. With this fact as his impetus, Skinner wanted to develop an approach to interpreting behavior change that was based solely on overt learning processes. But he made an error in attempting to interpret all behaviors by applying "principles of behavior" to <u>overt</u> behavioral phenomenon which <u>hypothetically</u> took place in the organism's past.

The later practice is in error in two ways. First, as in the neo-Hullian approach, s-r generalization and the development of cue-producing responses must be hypothesized as factors in behavior change, both past and present. Since Skinnerians look only at overt behavior these processes can certainly accurately <u>describe</u> some of what these researchers observe, but problems very similar to these found with neo-Hullian theory are still present when these mechanisms are hypothesized to have occurred in the organism's past. Stimulus-response generalizations are in effect hypothesized to be pos-

sible anytime on the basis of the fact that <u>some</u> such phenomenon can occur.

Skinnerians, like neo-Hullians, can hypothesize that s-r generalizations occurred in the organism's past whenever necessary and however plausible. The situation is completely similar in the case of hypothesizing the development of cue-producing responses earlier in the life of the organism. As in neo-Hullian theory, there is no way to predict when specific s-r generalizations or cue-producing responses will develop <u>or</u> to assess the circumstances under which they may develop. (Recall that this is not a problem for those taking the ethological perspective.)

Secondly: Again, as with neo-Hullian theory when and if significant learning will take place cannot be predicted any better with the theory than without it. Actually one might do worse with the theory. Because of Skinner's biases toward using only overt behaviors in his explanations of behavior changes, we are even further away from being able to assess all aspects of the environmental circumstances under which learning occurs. Since all behavior has environmental releasers, for every behavior ignored a part of the environment is ignored. As noted in the last section of the Chapter, assessing all behavior would not be a problem for one adopting the ethological approach. Such an approach would have appropriately allayed Skinner's fears.

In summary, this brief discussion of Skinner's behaviorism noted that Skinner's theory is an improvement over neo-Hullian theory in one regard: it recognizes releasers other than those associated with primary drives. I may add that Skinner clarified the phenomenon of negative reinforcement and contrasted this with punishment. These aspects of accurate behavioral description may turn out to be distinct contributions to understanding behavior. But ignor-

ing the covert factors which may potentially be involved in behavior change is a grave mistake. In Chapter One I indicated how covert, perceptual and cognitive factors could be assessd. Moreover, I indicated that these factors are related to behaviors which have been well integrated and are generally more stable than overt behaviors. By neglecting such factors in one's account of behavior, a researcher actually excludes the more stable, species-typical behaviors from consideration. Given the necessity of viewing behavior change in context, surely Skinner's theory is not of the nature of good science.

3. Bandura's Social Learning Theory

The modificaitons in learning theory which have yielded the most accepted modern social learning theory were largely the work of Albert Bandura and his associates. Bandura has argued against the Skinnerian approach, as I would, noting that because humans are subject to operant conditioning and reinforcement principles does not mean that most human behaviors are acquired through this direct learning process. Bandura's argument is an argument against the Skinnerian view that "external stimuli" directly and immediately elicit and shape behavior. He believes that Skinner ignores people's cognitive capacities and their ability to produce their own cues and their ability to construct their own reinforcement contingencies.

Yet, while Bandura and modern social learning theorists criticize the view that all learning has overt components as described by Skinner, they still consider no behavior change mechanisms other than learning. Modern s-l theorists are simply willing to consider more types of behaviors involved in such changes. Modern s-l theory does nothing to remove the supposition that all behavior is learned

somehow at one time or another. S-r generalization and the development of cue-producing responses are still involved in the account of behavior and behavior change. I submit that these latter processes continue to be subject to basically the same interpretive problems noted when we examined the neo-Hullian formulation.

Secondly, while modern s-l theorists may consider all types of behaviors which might be involved in behavior change, it is not at all likely that researchers using the modern approach can adequately assess the covert processes which they consider. Their model of these processes is based largely on an adult phenomenological model, which (as was the case with modern cognitive psychologists) is a truncated model of human functioning which accurately describes only aspects of human functioning developed rather late in life. It seems to work as a description of normal adult behaviors and aids in understanding some atypical adult behaviors. But, it is highly questionable whether the model, as applied, is flexible enough to allow for the understanding of the many qualitative differences between adult cognition and cognitive processes and similar processes of children of various ages. Indeed, even if the model itself is inherently flexible, it is very questionable whether the limited number of indirect assessment procedures applied in order to understand children's covert behaviors are sufficient. In my view it is not likely that such procedures give researchers an accurate view of the most significant differences between adult covert behavior and the covert behaviors of children. If we have very little basic understanding of the differences between adults and children, the kind of complete-model-first -- all-studies-second approach, I see being used, would seem to allow for a virtually endless number of mutually exclusive hypotheses, all seeming to be more or less equally important. Experiments generated by the numerous reasonable hypotheses

will, in my view, result in a great deal of confusion or will leave much to the artful imaginations of psychologists (which I believe they find inordinately proper and acceptable).

The fact that they do not view their approach as a complete-model-first -- all-studies-second approach, I submit, is due to a time bias in what is thought to be a meaningful, practical, or controllable period of observation or experimentation. Indeed, they have observed behaviors in various short time frames before formulating their model. This they believe to be sufficient background study. The idea of a complete appraisal of behavior, the idea of a human ethogram, is simply unthinkable. In my view this is due to a lack of confidence in the adult human observer and this stems directly from having no guidelines, standards and assumptions with which to accomplish the general appraisal task. It is my primary goal to clearly indicate that an adequate set of guidelines and assumptions for the purpose of obtaining a human ethogram does in fact exist. (see Chap. 1 & 5) It is also my purpose (Chapter 3-4) to show that indeed such an approach has a more comprehensive set of beginning assumptions and that these assumptions are well-based, formulated by the application of necessarily relevant biological principles to empirical (direct) observation. It is furthermore my purpose (in Chap. 3 & 4) to show that some of the assumptions used by scientists taking the ethological approach are better-founded than similar "assumptions" found in modern behavior theories. If I accomplish this later task, this will be a valid argument, in fact an irrefutable argument, in favor of changing present-day approaches in the direction I propose.

In brief I have the same basic reservations about Bandura's modern social learning theory that I had about past learning

theories:

(1) They do not consider all possible mechanisms of behavior change.

(2) The accuracy of covert behavioral assessment is not sufficient to understand the relative importance of covert behaviors assessed. More specifically, the actual role and thus the nature of covert behaviors cannot be adequately assessed.

Let's look more closely at this modern social learning theory:

Like Skinner, Bandura is an empiricist. He believes that learning theorists must identify antecedent environmental stimuli which elicit behavior and must identify the consequences of behavior in order to explain behavior and behavior change. Like Skinner, he downplays the role of internal (primary) drives in this process. Specifically, he believes that many environmental stimuli, not related to the commonly acknowledged primary drives, may elicit behavior. In other respects his modern learning theory differs from Skinner's radical behaviorism.

Bandura readmits cognitive behaviors as objects of study. In fact his model of these processes is much more elaborate and phenomenologically realistic (descriptive -- at least of the adult) than the primitive model Dollard and Miller offered regarding these processes. In Bandura's view all learning need not be related to behavior which the organism itself has performed. Through the intervention of cognitive processes, much learning can occur vicariously, as a result of the subject merely observing the behavior of a model. Direct and immediate reinforcement, like that Skinner would propose as essential, is in fact, not necessary for the process. In addition a <u>model</u> whose behavior a child observes and may come to imitate

may not have been rewarded for the observed behaviors. Also, often imitation of behavior by a child may be delayed until a later time (delayed imitation). The most famous studies demonstrating such possibilities were the "aggression" against Bobo studies."

In the "Bobo" studies it was furthermore demonstrated that children in a group who watched an adult aggressing against a large, inflatable Bobo doll and then getting punished would still learn the aggressive behavior. This was demonstrated by later offering the subjects in this group a reward for demonstrating what they had observed. Indeed with circumstances (contingencies) changed the subjects in this group demonstrated that they had learned from what they observed even though it had a negative consequence for the model.

To complicate matters further, it is Bandura's view and the view of modern s-l theorists that abstract verbalizations of adults and others may influence the learning of a child.

All of the above observations are very fine, interesting and important. But the reader should note that when one attempts to use a learning approach to understanding these behaviors, there are less and less easily assessable and definable environmental features involved and which can be used to understand the process. Also because the subject's responses are often delayed, both the existence and persistence of learning is harder to assess. Moreover, necessary considerations make proper and complete assessment of the covert behaviors more and more necessary. It becomes very important to be able to assess what the subject attends to, imagines, and what he understands. This is especially true when the subject can acquire behaviors by enacting what others have said and not only what they have done. We need to know a child's ability to assess verbal-

izations; we must know his propensities in regard to abstracting properties from the behavior in general. Knowledge of covert behaviors, such as that which would result from an ethologist's longitudinal study, would allow one to hypothesize not only which behaviors would likely be modified by learning (overtly or covertly) but which behaviors would likely persist.

We owe a debt to Bandura for his work in the area of behavioral development, for now we need not view complex behaviors as largely products of overt shaping and s-r generalization, as Skinnerians would have it. Language development, for instance, now can be understood as behavior change through imitation. But I question what behaviors we can really understand using the revised social-learning model. Are we guided to investigate truly important behaviors or are we simply to investigate those behaviors which are commonly viewed as important? What determines how behaviors, which are controlled so obscurely by environmental factors, are defined? It is becoming more and more difficult for adult researchers to define environmental stimuli important to the child.

Defining behavior and its environmental referents becomes even more difficult when we consider another complicating factor not yet addressed in our closer look at this modern s-l theory: Children vary much in their complex cognitive processing from stage to stage to stage. This is considered fortunate by ethologists, who posit human innate action patterns and who have a well defined way to assess them, for this actually offers us an opportunity for understanding. But this major factor or consideration is probably the most difficult problem for modern s-l theory. This is the problem which is most difficult to <u>systematically</u> investigate using a largely adult normative model of cognitive processing as modern researchers do. It may turn out to be much more productive to use a model of a

baby's behavior and come up with an acceptable way to explain changes that are observed. This is in fact what I propose in the ethological approach. Only by doing so do I believe psychologists will have a unique view of behavior and behavior changes which will actually allow for an understanding of human behavior which is <u>much</u> better than commonplace understanding.

Indeed, a comprehensive knowledge of species-typical covert behaviors is becoming more necessary. We must know what elements or features of stimuli and events a child is looking at in the environment. It is becoming more and more clear that adult researchers cannot simply see what it is that is important.

Using modern approaches researchers cannot systematically investigate the covert behaviors of young children. And in consequence they cannot understand the numerous developmental aspects of covert behaviors in older children and adults. The general problem of covert aspects of human behavior has turned out to be both very important and very complex.

Let's see if we can get a yet clearer indication of why an ethological approach is so important by looking still more closely at the modern social learning model. According to Bandura, four basic types of processes are involved in the acquisition of new behavior: attention, retention, motoric representation, and motivation. Let's take a look at each of these sequential processes:

Attention. Bandura says attention is influenced by both model characteristics and observer characteristics. This of course must be true. But there is a problem with the way Bandurans view such abstract characteristics as important features of the environmental stimuli. Modern s-l theorists act as if the attributed characteris-

tics -- characteristics attributed by the subject to the model and the environment -- are part of the characteristics of the environment which the observer or researcher can specify using what is by and large an adult, normative model of cognition and cognitive processes. It is true that developmental psychologists try to view things from a child's perspective, based on what they know of children's understandings, largely from Piaget. But I believe what results is too crude an approximation when one must be concerned with how behavior will develop over a long period of time.

It is necessary to have a thorough understanding of what specific features are important to the subject's understanding of both environmental attributes and person attributes. This, in my view, is lacking for any researchers taking a social learning approach:

In my view, important specific features of persons, things, and events are abstracted from the environment by the subject. Some of these features release relatively new behaviors; some features release established, stable behavior patterns. Researchers must know what features are abstracted and which correspond to newer behaviors and which correspond to established behavior patterns.[18] In my view knowledge, and understanding, of established behavior patterns and their releasers can only be obtained through extensive longitudinal study, using well-based interpretive guidelines. New behaviors and other overt behaviors can only be understood in contrast in this context.

The subject's attribution of traits to actors in the environment and the subject's understanding of environmental circumstances

[18]Also some relatively fixed behavior patterns which are occasionally overt (e.g. emotional reactions) are between the two extremes in their nature. They are still subject to changes in some degree as they are integrated with each new set of related behaviors.

entails "memory"[19] of specific class characteristics of many relevant environmental features. Though intimately related to what the subject presently understands, many of these covert behaviors are not generally part of the set of behaviors presently being affected or changed. The subject's understanding of stable attributes of the environment (including people) is the basis for new learning, but it is not so subject to change as what is presently being learned. A good theory must differentiate stable covert "memory" and assessment behaviors from newer more dynamic behaviors (covert and overt) which are subject to change. Modern social learning theory fails to do this. Both types of behaviors have releasers the subject attends to.

Rentention. As would not be surprising of one who in effect believes that important attributes are obvious in the environment, Bandura views retention as an active process based largely on a conscious type of covert behavior. Specifically, rehearsal is thought to be important in returning what is learned. While this is sometimes true, the need for rehearsal certainly varies. I believe Bandura considers learning to be a much more active (deliberate) process than it often is. There are two reasons rehearsal may not be as important as Bandura would have us believe: (1) Innate action patterns often determine the salience of environmental features. (2) Those features of an event or set of circumstances which are viewed as important are in a large part determined by "memory" of important stable environmental properties (including knowledge of lawful activity in events). Many aspects of "memory" are so stable as to be elicited automatically. Little conscious deliberation may be involved when such behaviors are involved in heightening attention.

[19] "Memory" is being used in an unusually broad sense. Review Chapter I for some understanding of the actual organismic condition.

Spontaneous, long-term (persistent) learning may occur with some behaviors under these organismic circumstances, with little or no rehearsal involved. The covert "memory" behaviors are based on past activities and development. Again, understanding the stable aspects of "memory", how they develop and how they are released is very important. The ethological longitudinal approach allows for this understanding.

Motoric reproduction. Bandura believes that modeled behavior must be translated into "action" at some time to be learned. Indeed, I believe this to be true, but Bandurans underestimate the amount of behavioral activity in general which may be covert and which can undergo change covertly. The distinct possibility that this later view may be correct results in no problems for one who approaches behavior with an ethological perspective.

Motivation. According to Bandura "motivation" is sometimes involved in learning. This is especially true when "clear-cut" rewards are not necessary for learning. Motivation is in essence a slop category utilized when his quasi-empirical model cannot explain learning. In such instances often only the most general environmental releasers can be specified.

Obtaining knowledge of covert behaviors involves a detailed study and obtaining meaningful or useful knowledge of species-typical releasers involves longitudinal research. When citing "personal factors" one should never in any way assume that releasers are not necessary for triggering species-typical behaviors or any unique individual behaviors. There would be no greater nonsense or nonscience.

The interpretive sloppiness that results from even this most recent s-l theory we have been discussing can be illustrated by the common analyses given to self-control and self-reinforcement behav-

iors. Often such behaviors are treated as if they were learned or developed en masse. The characteristic human behaviors which allow a subject to compare his behavior with internal standards is far from being understood as the product of a bit-by-bit, stage-by-stage process. The degree of useful, meaningful analysis is more reminescent of Skinner's analysis in Science and Human Behavior.

CONCLUSION What should be clear from my perspective on modern theories of behavior and development is an indication that development is poorly understood, although previous behavioral development may be vital for any good understanding of present behaviors. Little progress is being made. Consistently one finds a time bias in that modern researchers all believe that significant behavior changes take place by mechanisms they are able to observe in a short time period. Modern theorists furthermore believe that all behavior can be directly or indirectly assessed in reference to what is largely an adult phenomenological model which specifies only behaviors which develop rather late in life. The most recent social learning theory, though recognizing many types of behavior as important, still interprets covert behavior using what is for the most part this normative adult model of cognition and cognitive processes. Behavior change is still exclusively interpreted in terms of short-term mechanisms.

In the next chapter we will explore historical roots of observational and interpretive biases. We will see that some basic questions about human nature have been answered only after formulating a theory or model, when in fact some of these questions could have been better answered before the formulation of the theory or model.

The better answers to some of these questions will be obtained based on the application of necessarily relevant biological principles to empirical observation and with no presuppositions. I will submit that these answers to basic questions should have been used as assumptions upon which to base any approach to understanding human nature.

Chapters Three and Four Will Not Be Presented

What Follows is the "Core" Material

of Chapter Five

It outlines a set of assumptions for interpreting

data which are in accord with the ethological perspective

presented in Chapter One

A Modern Scientific Perspective for the Interpretation and Integration of Studies on Development and Personality

A research perspective is a delineation of the field of study or a definition of the subject matter. It will necessarily limit the subject. With this in mind, a research perspective should not exclude potentially important observations and data. "Potentially important data" are, of course, data which may have a causal relationship to some phenomenon of interest. The first and foremost characteristic of a research perspective is therefore as follows: A research perspective must encompass the subject matter in such a way that all significant causal factors and interactions leading to and actually yielding (causing) phenomenon of interest are viewed and recorded in a standard (replicable) way. It is never certain that a research perspective will do this; the individual researcher must choose a perspective that will only probably fulfill this basic function.

It is true that assumptions will have to be made which limit the subject and provide a first educated guess about the nature of the subject. And, of course, any research perspective may, in time, be proven misguided or inadequate by the data. With this well in mind, I believe there is at present a set of assumptions about personality development which allows an appropriately open-minded perspective on human nature. Also, these assumptions, which I will outline below, will characterize a research approach which is heuristic in two important ways: First, approaches based on the assumptions will be replicable to an acceptable extent. (Skeptics, I could argue, will simply be forced by reason to try it and see.) Second, all causal sequences subsequent to a first sequence and

which "stem from" or are related to the first causal sequence will be readily observed as such. This, suffice it to say, will allow continuing research with the individual subject. This characteristic seems to be particularly important in human research.

Furthermore, I believe that the set of assumptions, which I will soon present, are begged by an overview of the subject areas of personality development and by recent insights into what is necessary for an open-minded perspective on causal factors of human behavior.

As you read the assumptions, it will be helpful to have a certain type of research in mind. Imagine a researcher who has decided to study a segment of the life of an infant in its natural setting. He is video recording in order that he may review what he has seen at some later time. He is viewing and recording notes within a framework dictated by the seven assumptions (below) and the ethological view of behavior and behavior change. His study is completely nonobtrusive and non-interventionistic (at least in so much as possible). He will observe the same subject at some later point in time and observe behaviors he believes to be related to the first.

The assumptions necessary to segment a human's life and still legitimately study personality development <u>are not</u> given below. Coming up with scientifically acceptable assumptions of this nature is something which must be left to individual researchers, with their particular concerns. Different assumptions may have to be used for differing concerns. Since these various assumptions must be developed at a later time, it may be helpful for the reader to <u>imagine</u> that the researcher is watching the subject from birth to adulthood, naturalistically, non-stop, and "nonobrusively".

I have indicated that the imaginary researcher will be observ-

ing the infant and child "naturalistically". Before describing the seven assumptions it will be helpful to know, more specifically, what this means. The assumptions will dictate that the researcher discriminates three types of behavior: (1) He is noting the manipulation skills of the subject -- how the subject overtly manipulates the environment. In noting this type of behavior and in noting the other two types of behavior below, the researcher will compare the individual's present skills and behaviors in interacting with the environment with his past skills and behaviors.

(2) The researcher notes more basic or important drive behaviors as they manifest themselves in conflict situations. The terms "drives" (with a small "d") or "drive behaviors" will be used to refer to observable manifestations of innate action patterns which are still in need of further interaction.

(3) The researcher "notes" perceptual-intellectual (cognitive) skills which are implied by (inferred from) the present overt responses ((1) and (2)). He should expect that these implied internal manipulations are similar to overt behaviors previously observed or which manifested themselves in overt behaviors previously observed. This notion is based largely on the developmental studies of Jean Piaget. (There are problems in assessing perceptual-intellectual skills which will be noted later in the assumptions.)

In short, all the imaginary researcher does is continually make these discriminations and compare them with similar types of behaviors in the subject's past. Hopefully any ambiguity about these activities will be cleared up by the assumptions. Also it is hoped that this general overview of the research activities dictated by the assumptions (and the ethological perspective in Chapter One) will make the assumptions themselves more intelligible.

THE
ASSUMPTIONS FOR CONDUCTING RESEARCH AND ALLOWING
FOR INTERPRETATION AND INTEGRATION OF RESEARCH FINDINGS

I. MORE BASIC (I.E. IMPORTANT) BEHAVIORS CAN BE SEEN IN CONFLICT SITUATIONS.

Debilitating conflicts or struggles with the environment are not sought by humans or other animals and, in general, are experienced only inadvertantly. As humans interact with the environment, conflict can be said to occur when conflict drives (innate action patterns) are called into play or when a particular environment is distinctly physically threatening. The latter occurrence is rare, but conflicts between drives, with varying degrees of debilitating stress involved, are not so rare. It may be assumed that such stressful conflicts are, in general, not feigned, but rather in some way represent unavoidable conflict between the drives. Such conflict thus should give researchers a chance to note important recently emerged innate action patterns that all humans similarly (but not identically) possess. It is important to realize that these drive behaviors may have undergone some changes, due to learning or due to the emergence of new innate action patterns. Also such innate action patterns often become predominant aspects of perceptual-cognitive reality as the infant develops into a child, etc. This leads us to Assumption II.

II. ALL BEHAVIOR MUST BE VIEWED WITH THE PAST HISTORY OF THE SUBJECT IN MIND.

Many conflicts which an individual experiences must be viewed historically so one is aware of what drives or innate action patterns have recently emerged and so the degree to which drives have been "conditioned" or otherwise developed can be assessed. This can only be done by having information about earlier developments in the human's life and after having made unambiguous observa-

tions about the nature and development of drive-associated behavior throughout life. This historical perspective is equally important for understanding the other two types of behaviors, namely manipulative skills and perceptual-intellectual skills.[20]

III. IMPORTANT MANIPULATIVE SKILLS CAN BE NOTED DIRECTLY AND COVERT BEHAVIOR CAN BE INFERRED BY AN OBSERVER WHO HAS BEEN ENGAGED IN AN EXTENSIVE LONGITUDINAL STUDY. THIS WOULD HAVE TO INVOLVE A NATURALISTIC, UNOBSTRUSIVE STUDY OF THE SPECIES-TYPICAL BEHAVIORS OF A SINGLE SUBJECT.

Viewing conflict situations (settings) and behaviors, together comprising conflict interactions, would be only part of the information an observer could unambiguously collect as he noted an infant devloping into a child, into an adolescent, and finally into an adult. I choose also to believe that an observer, with the proper set of assumptions, could also assess the significant overt skills and covert skills of the subject. The most important skills a researcher would assess would be the largely covert, perceptual-intellectual skills of the subject. (More will be said about this in the next few paragraphs.) The most important overt manipulations of the environment by the subject can easily be assessed; these are especially important in infancy and during early childhood. More must be said about assessing covert perceputal-intellectual skills (p-i skills).:

Important p-i skills have been sampled and investigated by Jean Piaget in a magnificiently impressive manner. Following his lead and noting his results, I believe that these skills could be implied from overt behaviors in the natural setting with sufficient frequency to assess their nature and the mechanisms by which they develop and change from infancy to adulthood.

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[20]The term "perceptual-intellectual skills" is synonymous with "thought manipulations" or "cognitive skills". I consider perceptual skills mainly as a type of intellectual skill because they are often much related to significant intellectual (thought) activities.

Unfortunately (for the researcher), thought processes (cognitions and cognitive processes) also enable the individual subject to perceptually reorder the environment "internally". Moreover the human subject may successfully "play" at solving certain problems even (apparently) independently of his momentary environmental context. These two facts will make interpretation of covert interactions sketchy and necessarily incomplete and others impossible via simple observation and direct inductive inference.[21] Yet, one should expect whenever possible, that whatever internal manipulation skills are used, they were at some time, previous to their onset, in actuality or in effect practiced through active, overt manipulation of the environment. Indeed this should aid proper interpretations. Since interaction with the environment is central in human development such interpretations should be possible more often than not.

As always, any data, lack of data, direct inductive inferences, or indirect inductive inferences[22] must be made explicit if any interpretation is to be given at all.

As you will see later in Assumption VI and VII, the individual subject's perceptual-intellectual skills have a central role in properly viewing and interpreting all interactions of interest. Because of the centrality of human thought, this will be true even

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[21] Direct inductive inferences are inferences made from the fact that major relevant releasers are present in the physical setting or environment in which one is presently viewing the subject. The subject's past experiences and behaviors in similar settings are, of course, always considered when making interpretations.

[22] Indirect inductive inferences are inferences made largely on the basis of behaviors and experiences which the subject has displayed or encountered in the past. The present setting is much less relevant to interpretations (except in its apparent absence of important or relevant releasers) than in the case of direct inductive inference.

Further evidence that covert behaviors inferred by direct or indirect inference actually occurred will later be found.

when the researcher is viewing something which could be termed a 'drive conflict' or an 'emerging drive'. The p-i system (thought system) of the subject will also be used to interpret all expected or unexpected skillful physical manipulations of his environment. Hopefully this central role of the subject's p-i system will be adequately explained in Assumptions VI and VII.

IV. ONLY UNOBTRUSIVE OBSERVATIONS USED TO INTERPRET THE BEHAVIOR OF SINGLE SUBJECTS WILL BE UNBIASED, BE SUBJECTS CONSIDERED AS MEMBERS OF GROUPS OR AS ISOLATED INDIVIDUALS.

I believe that an unobtrusive observation method should be maintained even at apparently high cost. Secondly, data from other similar studies of other subjects should be used only when the researcher is unable to draw his own inferences which are equally scientifically acceptable. It is important to note that in actual research, because of practical limitations on the extent of observations, such "borrowing of information" on some occasions may be very appropriate (and possibly necessary). But a researcher may be tempted to use data from experiments which use the more common manipulative research procedures. This should be done with the greatest care because these studies very often bias the importance of the variable under study (also the variable is often poorly defined). If such data are used it should be done only when the researcher cannot draw equally acceptable inferences himself or by borrowing information from similar unobtrusive studies. In any case, if a researcher uses data or hypotheses from other studies, he must state explicitly that this is what he has done. Readers should realize that additional assumptions are always involved when this is done.

V. ALL BEHAVIOR IS DIRECTLY OR INDIRECTLY INTERACTIVE WITH THE ENVIRONMENT AND ALL BEHAVIOR IS HOMESTATIC OR WORKS TOWARD HOMEOSTASIS. ALL SPECIES-TYPICAL BEHAVIORAL DEVELOPMENTS, LEADING TO MATURE FUNCTIONING, ARE ADAPTIVE. ALL INTERPRETATIONS MUST BE CONGRUENT WITH THESE FACTS.

From another point of view, this Assumption concerns the nature of Drives in the broadest sense of the word. Previously, in this treatise, drives (usually, relatively new innate action patterns), physical manipulation skills, and p-i skills have been referred to as separate things. And, indeed, these are seen as different types of things. Nonetheless, since all these environmentally interactive behaviors are motivated (directed toward objects in the environment), they are all in a sense Drives. The important aspects of skills are nothing more than well delineated and refined Drives. It is in this most general sense that I will now speak about Drives. Also, other possible influences upon behavior, not previously noted, will be pointed out.:

Drives are behaviors which are directly or indirectly interactive with the environment and are homeostatic (in the broad sense of the term I use). All important behaviors observed are Drives or manifestations of Drives. Drives function either to return the organism, interacting with the environment, to some necessary steady state or to satisfy some appetence of survival value. This is true in some way even when Drives seem to operate out of context. Only such an interpretation of Drives is biologically acceptable.

Drives, of course, may be modified by learning or conditioning. New stimuli may aid the development of a Drive OR MAY TRIGGER NEW drives, as the organism develops perceptually-intellectually or physically. HORMONE CYCLES may have an influence on Drives, although their influence must be measured physiologically or strongly implied by the lack of another acceptable cause.

There may be SENSITIVE PERIODS during which Drives develop or during which new Drives emerge. This is to say, that not only may new innate action patterns which lead to new p-i skills emerge, but it is conceivable that certain other pre-patterned physical manipulation skills (overt manipulation skills) may emerge in this way.

Lastly, but importantly, all psychologically significant, motivated behavior (Drives), whether skills or more primitive, basic drive behaviors, WILL BE CONSTRUED BY THE SUBJECT HIMSELF AT ONE TIME OR ANOTHER. This leads to Assumption VI.

VI. FOR IMPORTANT BEHAVIORS TO BE PROPERLY VIEWED, PROPERLY UNDERSTOOD, AND PROPERLY INTEGRATED WITH THE REST OF ONE'S UNDERSTANDING OF THE SUBJECT, ALL BEHAVIOR MUST BE INTERPRETED WITH PRESENT INFERENCES AND PAST INTERPRETATIONS OF THE SUBJECT'S P-I SKILLS IN MIND. IN OTHER WORDS, ALL BEHAVIORS MUST BE CONSTRUED "WITHIN THE SUBJECT'S PERCEPTUAL-THOUGHT SYSTEM".

(Note: If Assumption VI is proven true, it will actually be a corrolary of Assumption II.)

This assumption is based on the belief that the application or partial application of p-i skills is a pervasive characteristic of human interactions. These behaviors are the predominant skills by which humans have survived. Behaviors can be referenced to the subject and for the researcher by relating all behaviors to what the researcher has determined to be the subject's perceptual-thought system. At the same time this is the only accurate way to understand behavior as an ethologist conceptualizes it.

The subject's perceptual-thought system is, of course, his p-i skills as they are variously applied (species-typically). Some of the clearly observable data which the researcher has amassed indicate where and how the individual applies his p-i skills. Of course, where the subject fails to apply these p-i skills will also

be indicated. Understanding the integration of innate action patterns (as manifested in conflict or as seen during close longitudinal observation) and overt manipulative skills with (or "into") the perceptual-cognitive system of a child should present few problems for the deliberate, mature, clear thinking researcher. But, assessment of the adult subject will require the comparison of thought systems and mature outlooks which may well be on equal footing. It will be exciting to see how judgements will be made.

VII. AFTER CONSTRUING ALL BEHAVIORS IN TERMS OF THE SUBJECT'S PERCEPTUAL-THOUGHT SYSTEM AT THE TIME THEY OCCURRED, THE DATA ARE APPROPRIATELY INTEGRATED. INTERPRETATION IS CLOSE AT HAND. IT WILL SIMPLY INVOLVE COMPARING THE PRESENT BEHAVIORS WITH SIMILAR PAST BEHAVIORS. INTERPRETATION IS MADE IN TERMS OF the VARIOUS POSSIBLE TYPES OF BEHAVIORS (NOTED IN CHAPTER FIVE) AND IN TERMS OF THE MECHANISMS OF CHANGE DEFINED IN CHAPTER ONE.

This assumption follows from Assumption II and VI, but may be seen as involving one or more important views. The final statement of results to be expected from Assumption VII involves the following outlook on science: In scientific work, the presentation and interpretation of data are really nothing but a selective description of the phenomena observed. Laws are causally significant observations which are consistent and replicable (across subjects). What determines what an observer reports are lawful relationships and descriptions of importance to the end phenomena of interest.

The main end phenomena of interest in personality development is how certain of the individual subject's present behaviors relate to his past behaviors. Also, of interest is how the subject's behaviors compare with presumably skillful, mature interactions with the environment (both perceptual-cognitive and physical). Few researchers would deny that, for the human, skillful interaction depends mainly on the cognitive or p-i skills that have developed. And, as

noted before, the organization and resultant application of these skills is highly important. How the individual's thought manipulation of the environment has developed determines how variously and skillfully he can apply his other skills. Hopefully most would agree that the development of cognitive skills, along with some kind of environmental manipulation, actually guides the development of other skills (given his Environment and his hereditary capacities).

SUMMARY

After the groundwork is laid, after the human ethogram has been obtained, behavioral data, no matter at what point gathered in a person's life, can be assessed and interpreted by asking and answering the following questions: What are presently the overt skills of the subject AND, given the individual's past interactions and his hereditary characteristics (innate action patterns, hormone cycles, and sensitive periods), HOW IS HIS BEHAVIOR AND HIS PERCEPTUAL-THOUGHT SYSTEM ORGANIZED AS IMPLIED FROM HIS PRESENT BEHAVIOR? A researcher with clinical concerns might further ask: Given the environmental interactions and heredity which have led to the present behavior and perceptual-thought system, how might his skills be better developed and his thought better organized?

The basic questions (the first two questions of the above paragraph) should be answered in the following step-by-step manner:

STEP 1: The interaction causative relations between stimuli and Drives (broad sense) which are unambiguously observed (in light of all the numerous causal sequences witnessed throughout previous development) must be stated explicitly. In other words: what habits have been developed; what are the subject's manipulative skills; what perceptual-intel-

lectual behaviors have developed and are at work; what basic drives (innate action patterns) are still prominent; and what stimuli are still presently effective.

STEP 2: As has been the method all along, any causation observed must be defined with reference to the subject as he interacts with the environment and must be delineated with reference to the subject's cognitive structure (perceptual-thought system). (One will find, as is the case in other sciences, that much of the interpretation of data is the result of the delineation of the data by the subject himself).

STEP 3: The significant data which one chooses to select and report will, of course, have a very intimate relationship to data collected earlier in the subject's life. Differences between past and present behavior will be hypothesized as due to the scientifically acceptable mechanisms of change as outlined in Chapter One, or previously in this section of Chapter Five.

The result of this interpretive method is an interpretive perspective, which is nothing but a report of important data and explicit inferences and hypotheses. Given the perspective of Chapter One and the seven assumptions above, it is still basically a report of observable phenomena, now simply refined (and detailing only the important conclusions and remaining questions).

It is important to keep in mind that, ultimately, causes of behavior and behavior change relate to physiological phenomena which most often are not measureable. This would often be the case for hormonal control of behavior; it would be the case for whatever might be the physiological counterpart of behaviors occurring or emerging in response to certain stimuli during sensitive periods, and for the physiological correlates of learning, memory, and the emotional reactions. Some of these phenomena are inferred from observation. But, it is my view that all lasting, species-typical behaviors and all significant behavior change mechanisms have overt manifestations at one time or another.

CONCLUSIONS

The seven assumptions above, strictly speaking, seem to allow for only continuous observation of subjects. Needless to say this is impractical. Nonetheless, I will emphatically submit that these assumptions, which I have outlined, must be considered as the core within a larger set of assumptions which somehow explicitly state how a subject's life can be legitimately segmented or sampled. Segmenting an organism's life can surely be done without violating basic biological principles, but a good rationale must be drawn up and made explicit. Also, additional assumptions may be necessary when data gathered from more than one subject is found necessary for making certain interpretations. In short, I am claiming that given the present state of the science, my assumptions must be among those considered if one is to be engaged in legitimate scientific research regarding personality development.

I have indicated that a naturalistic, unobtrusive method of

study of individual subjects applied over extended periods of time should be the nature of early research in personality development. If a researcher acts as a stimulus, there may well be a problem maintaining the objective perspective which I have outlined. The problem is the possibility that any preconclusions a researcher may have about his effect could make proper interpretation more difficult. As I noted earlier in the treatise, manipulative studies of other subjects could possibly be used to shed light on the interactive effects between the subject and the environment which one is presently observing. But because of possible bias this should be avoided.

It is naturalistic, longitudinal research, appropriately segmented, which I believe holds the prospect of more general (species-typical) results and which will offer the most promise in the long run.

In closing, I would like to ask the reader to consider how existing research data might be better organized by looking at it in terms of the perspective of Chapter One and the seven assumptions and then determining what other assumptions have been made. If researchers attempted to do this with their data in their areas of personality or development, they might get a better idea of the full set of assumptions they would like to operate with. A researcher's arguments might then become more substantial and subject, at least in theory, to proof or disproof. No doubt those engaged in immediately practical research or in clinical research will continue to bicker until research on general topics is better organized, integrated, and developed.

APPENDIX

Position Paper on "Of What an Individual is Conscious and the Nature of Consciousness and Awareness

It is important to draw a distinction between those things and processes of which an individual is merely aware and those of which he is conscious and may work upon deliberately and directly. This amounts to a distinction between consciousness and the unconscious. In addition we shall find that there are mental processes in an in-between state between the two extremes. These may be usefully defined and may be called "subconscious processes". Let me begin with an oversimplified description of these types of phenomena.

In the body of the paper "A Human Ethogram: ...", the unconscious processes are cognitive directives which are well developed and well integrated. These processes define the face of reality itself and as such are certainly part of one's awareness. But, in what way is one aware of these? My answer is that an individual is aware of these phenomena indirectly; he must infer the existence and the nature of these processes. Relatedly, he may change these unconscious directives and they may accrue dimensions or diminish in their dimensions only gradually and on the basis of a prolonged period of adaptation (through a new consistency in his life). The <u>degree</u> to which an individual is aware of these processes and at the same time able to infer them depends on the nature of the relevant circumstances in his life or his degree of overall adaptation. This view fits well with Freud's view of these processes as "unavailable" to consciousness, but at the same time more clearly indicates the circumstances under which heightened awareness of these processes may occur and thus when one can begin to affect changes in these pro-

cesses.

Of course those processes of which an immature individual is most often most aware are the thought processes typical to his present stage of development. These should be called conscious processes and defined as those covert processes which are a subset of the deliberate manipulations of which the individual is capable (and the covert "objects" of such deliberate manipulations).

Between the extremes, there are thought processes which are literally a combination of unconscious processes in a "trial stage" and processes which are deliberate manipulations or "objects" of deliberate manipulations. Such combinations should be defined as "subconscious processes". Much confusion is common today between subconscious processes and "unconscious processes". This is due to the lack of good definitions which draw distinctions between these types of processes. It is also due to a failure to understand what releasers are required to elicit these behaviors. Sometimes an individual may be unable to infer or be conscious of certain subconscious processes simply because sufficient releasers are not present. One should know that indeed processes are subconscious and not unconscious if a degree of meaningful* direct (deliberate) manipulation of these processes is possible. If under ideal circumstances, the processes can <u>only</u> be inferred (or can just in part be inferred), then the processes may possibly be unconscious an much work may need to be done if better adaptation in therealm of life under discussion is desired.

There are other causes of confusion. In cases where it is conscious or deliberate to some degree, active avoidance (overt or

*"Meaningful manipulations" are those which would result in significant behavior change if simply continued.

covert) may make understanding covert behavior difficult. Many subconscious processes may be misconstrued as unconscious because of this. Similarly, recent emotional maladaptations may result in misunderstandings on the part of an observer or therapist.

At the beginning of this discussion of covert (mental) processes, I noted that it would be an oversimplified description. It has been an oversimplification because emotional reactions in combination with cognitive processes has not been considered. Of course this is a common occurrence, especially in the realms of life where maladaptations most often occur. Recall that emotional reactions occur when the appropriate pattern of releasers is present. These reactions are understood and given much of their "substance" as they are integrated with cognitive processes. Taking into account the characteristics of memory, emotional reactions are thus regulated by cognitive processes and these processes may be conscious, subconscious, or somewhere in between. It is also true that cognitive processes may be influecned by emotional reactivity and past cognitive-emotional adaptations. Since this influence is determined by past developments, the influence is generally of a relatively cruder nature.

APPENDIX II

This appendix is meant to elaborate on the place of the ethological perspective in the study of human behavior. The perspective, outlined in "Key Chapters and Sections of 'A Human Ethogram...' ", should not be construed to be a way to fully explain actual (particular) cause and effect relationships by itself. For that reason it is in a sense not comprehensive. But this is not a fault of the theory for reasons I will describe below. The theory is rather a beginning point with which one must organize phenomenological data. The organization of data in the way prescribed by my theory is an organization which should apply to all data which can be described largely without reference to behaviors typical of just the particular stage of development under study. It is a well justified prescription, based on necessarily applicable general biological principles. But certainly more research and more theoretical work (the latter concerned with further organization of the research) will have to be done for each of the developmental stages. Still further work will have to be done to deal with particular topics or questions.

This brings us to the point and to the clarification I hope to provide. It is high time we recognize that the study of human behavioral development must be done more systematically than has most often been thought. In fact, I argue, that to systematically study behavioral development we must take at least a three tiered approach. We must recognize the probable limitations of our consciousness and imagination and make reasonable decisions about how to divide and manage our questions and concerns so as to systematically move towards accurate, clearly conceptualizable "answers" or understandings. In my opinion this will involve at least three levels of

theorization (conceptualization). My ethological perspective represents but the first. Let me describe what I see as the nature of each level of conceptualization and the problems we have heretofore experienced by not following such a systematic course.

The first and most general level of conceptualization is a theory that pertains to all behavior, yet does not itself embrace all phenomenology or all the particular mechanisms of change. This is a theory that describes what general superordinate patterns are involved in all behavioral development and is true across stages and in its more general aspects, even across species. Modesty aside, it is my view that the proposal for a human ethogram as outlined in my paper is the best representative in this class. I believe my persistence, love of the subject matter, and lack of constraints and of the necessity to make pre-mature decisions has allowed me to consider the subject as a whole and with regard to essential science principles. The main point may be that I did this aside from any vested interests in more particular research concerns or concerns with institutional acceptance. This level of conceptualization is often distorted by modern psychologists because of their education. Either they tend to generalize the particulars or embrace some poorly conceptualized generality and yet end up over generalizing it! The behaviorists, social-cognitive theorists, and phenomenologists are examples of the first type, while the Freudians, neo-Freudians, and Piagetians are examples of the latter. Also, inaccuracy in developing conceptualization on this level is promoted by traditions of philosophy and religion. Often individuals pre-limit the scope or nature of their observations unnecessarily. It may be one of the ultimate ironies of modern man that in fervently seeking

answers to questions about his own nature he limits his studies and then desperately grasps for borrowed methodologies. This prevalent tendency and resultant shortcomings on this level of conceptualization allow for little progress in psychology. Essentially, data cannot be understood by all in the same way and cannot be organized.

Surprisingly, we adapt to what seems to be a necessary and perpetual confusion and ignorance with a rather positive attitude. In fact, many like this situation, where their own insights can be as useful and beneficial as those of psychologists and philosophers. In fact, for many, many purposes the intellent lay person (the "man on the street") may indeed have as much useful expertise as the scientist. "Systems of belief" allow for all of us to accept our confusion as a matter of course. Fortunately, this stagnant situation need not remain the case if we come to understand the kind of organized systematic approach which is probably necessary. Again, I will submit to you that at least three types of theorization (three levels of conceptualization) are necessary to come to the understanding of any questions <u>where developmental concerns are involved</u>. The seeming failure of my perspective to explain anything can be accounted for by the fact that it is but a step in the process towards understanding. See how well it subsumes data which is of the cross-stage or cross-species type! And it negates or denies nothing that might be found with further close study as the next levels of conceptualization develop and the theories of these levels are crafted.

The second level of conceptualization and theorizing will result in theories of each stage. These will embrace much more data of the particular stages under study. The reason is quite simple. Although <u>completely consistent</u> with the general theory (the level I

theory just described), particular sensitivities and innate action patterns unique to the stage will be recognized. Many such patterns and sensitivities will likely be seen as important not only to that stage but as continuing aspects of the organism, important to subsequent development. It may be very important to develop these level two theories of the stages sequentially. This way one can recognize and understand the way the "stage was set" for the unfolding of new perceptual sensitivities and capacities. Newly emerging motor abilities will undoubtedly be among the important innate action patterns that emerge. "Laws of learning" such as those described by some behavior theorists may even conceivably be involved with stage typical behavior, though I would expect to find an interesting biological rationale for their existence, especially if indeed such tendencies are discrete. These types of learning would be in addition to the kind of learning parsimoniously described as always occurring (i.e. occurring with some behaviors in all stages) by my general ethological perspective. There are of course other possible causes of behavior change; hopefully the types of other possible causes are all outlined in my manuscript.

The problems common with this level of conceptualization are seemingly similar to those of the first level. The big exception being that few deny the necessity or meaningful existence of this type of conceptualization. Some of the research data that would form a basis for this type of theory, unlike the case with the first theory type described, exists and is readily available and of good quality. Because of problems of conceptualization the data may occasionally be biased by ill-begotten theoretical orientations, but most research admirably describes phenomenology. To mention just a

couple of examples of good sources for description of stage-typical behaviors I will cite Child Development: A Core Approach by Weiner and Elkind and Child Development and Personality by Mussen, Conger, and Kagan. Nothing is to say these sources are complete, but they are admirable compilations of careful descriptions and nomative data.

At least one more level of theorization would seem to be involved for thoroughly understanding data on personality and development. These theories would embody and organize the data involved with any particular aspect of personality. The questions may primarily involve factors of just one stage or factors of many stages may be involved in the question. Unfortunately most often the adequate organization of data on this level is nearly impossible at present. For many particular purposes (and for the more important purposes) existing data cannot be organized and understood. As noted before, we cannot gain enough understanding of what the results really were and the place of the results in behavioral organization of the organism to integrate them. Of course what is necessary, from my point of view, is a general theory of behavior and theories of the stages consistent with the general theory (as described) then all the particular research data would have a chance of being correctly construed and presented. This would be so because the theories organizing this data would be consistent with the theories of the other levels as much as need be. Analogous to the relationship between the general theory and the second level theories, these third level theories would embody more phenomenology, some of which could not be fully explained by more prevalent (often superordinate) behavior patterns.

The problems at this level of theorization are not clear to everyone. First, because of some success at organizing data and at finding some answers, the problem does not seem to exist. And, sometimes reasoning by analogy seems to work adequately to solve some notable problems. True enough. But these are blessings accrued by time spent and the results of the activities of our native capacities for organizing data. In spite of the fact that researchers have some experience with humans under extraordinary circumstances, the "man on the street" sometimes has the same quality of experience and the same quality in the organization of his data. I say: for shame!

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